שהתכלת דומה לים
והים דומה לעשבים
ועשבים דומין לרקיע
ורקיע דומה לכסא הכבוד
והכסא דומה לספיר

SEE P. 83-4
& P. 39

PLEASE NOTE THAT THIS SEFER IS NOT YET COMPLETE AND DOES NOT YET HAVE FULL RABBINICAL APPROVAL.

ספר

אומרים שבעים

“THEY SAY SEVENTY”

‘70’

CHIDUSHEI TORAH

on

CHUMASH AND PERKEI AVOS

by

AVROHAM SHLEMA
ADLER

ARRANGED BY PARSHA

WITH A NOVEL SYSTEM OF

TORAH GATEWAYS

TO AND FROM
THE STUDY OF

THE SIX WISDOMS

OF THE MATERIAL WORLD

27 KISLEV, 5783
Yerushalayim Ir HaKodesh
278 pages
[INDEXES NOT UPDATED]
~272k words

TCHELIS IN TIBERIAS.
HERB COVERED HILL IS BE-TWEEN GREEN ARROWS.
SEE:
SEEING WHAT SEEMS MISSING
P.83-4

For information about this sefer, the author or the author’s four other s’forim cited in this work:
אות הוא לעלם **A SIGN FOREVER : How A Mother And Son Became Shomer Shabbes In The Modern World;**
ובלכתך בדרך **AS THOU GOEST BY THE WAY: Applying Torah in Public Life:Transportation, Education, Energy, Communications, Housing, Public Safety, Sanitation and Peace in Israel; TORAH AND THE TALIBAN: A Closer Look at the Pre-9/11 Taliban Based On Torah Law & Objective Data, 288 p, 278K+ words & ~1K footnotes;**
HOW TO PREVENT MYOPIA... BY LEARNING FROM THE STUDY HABITS OF SOME OF THE WORLD'S MOSTBOOK-READING-INTENSIVE, COLLEGE-AGE STUDENTS, 52p., 27+ K words,100+ refs. please email:avshadler@yahoo.com

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II

LIST OF GATEWAY SUBJECTS

Many of the chidushim in this sefer – those marked with the gateway sign: II -- are enhanced by knowledge of what are usually understood as secular subjects – or, more traditionaly, the Six Wisdoms [א]. These chidushim form natural two-way gateways: to the study of the world to which the Torah refers and to the study of Torah from a knowledge of the world. The Keshes B'Anon – "The Rainbow in the Clouds", serves as a gateway both to and from what is usualy called 'physics' – but here, a textbook on physics would not be called "Physics." It would be called "Keshes B'Anon". This way, whenever we look at the book, we are reminded of its connection to Torah, why we're studying it and what should be central to all of our studies: deepening our knowledge of the Derech Hashem.

EXAMPLES OF GATEWAYS

ENGLISH TITLE	TORAH TITLE	TORAH & SECULAR SUBJECTS COVERED	PAGE
Gate of the Rainbow	הַקֶּשֶׁת בֶּעָנָן	Individual Responsibility/ Physics, Meteorology	14
Gate of the Stars	וּסְפֹר הַכּוֹכָבִים	Being an Example / Mathematics, Astronomy	18
Gate of the Camel	עֲשָׂרָה גְּמַלִּים	True Kindness / Biology, Sustainable Living	20

Other Possible English Titles: Gate of Adam Gate of the Dust Gate of the Grasshopper Green Gate Gate of the Blind
Gate of the Just Gate of the Needle Gate of the Rings Sapphire Gate Gate of the Tower Water Gate Gate of the Wolf

SECULAR SUBJECTS

MANY OF THE TORAH SUBJECTS COVERED IN THIS SEFER ARE EVIDENT IN THE TITLES OF EACH CHAPTER. A SEPARATE LIST WILL BE SUPPLIED, GOD WILLING, IN THE COMPLETED WORK.

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א . See, in this sefer, THE DIMENSIONS OF WISDOM

INTRODUCTION

We learn that the Torah is given in seventy languages -- which is also understood to mean seventy perspectives. We are told that for every sentence in Torah, there are seventy interpretations – many of them apparently contradictory, but all of them true[1].

We also learn that if we find two statements in Torah that appear to be contradictory, we should look for a third statement that will resolve the conflict [2].

How can this be? It is a way of thinking that defies the conventional sense of the world. In that world, if two sentences contradict each other, one or both of them must be false. How can a third statement come and show that both of our initial statements are true?

Here is an example I've often used to explain this: One statement tells us that the print on a page is not black. Another statement says the print on the same page at the same time is not white or any shade of gray. These two statements appear to be difficult to reconcile. We find a third statement that says: "The sky is blue." This third statement appears at first to have nothing to do with our problem-- but it's directly relevant. It reminds us of the existence of color. We see immediately that there are actually thousands of possible answers. The print may be blue or green or red or any of the other colors that we can see. It may even be silver or multicolored or have a color that changes with time.

The first two statements framed the problem in a misleading way. They appeared to limit the possible solutions to one-dimension -- the range from black to gray to white. The reality is that there are many more dimensions that we could explore, and when we include these other dimension in our search for a solution, the answer is obvious.

The seventy languages, seventy perspectives and seventy explanations are to remind us that the world is multidimensional. We must recognize that there are more dimensions to the problems we face than may at first appear. With this understanding we will have more reason to look at any given problem through different eyes – from a different perspective -- and see one or more dimensions of the problem that lead directly to a solution.

This general method of problem solving may be applied in every area of our lives: first of course in learning Torah, but also in science and invention, in public policy and in the personal choices that we must make each day.

The chidushim found in these pages are a product of this general way of thinking. May they broaden and deepen our knowledge of Torah and lead us more surely on the Derech HaShem – The Way of God.

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[1] Sotah 32a, on Deut. 27:8 'And thou shalt write upon the stones all the words of this law very plainly.' The Zohar [זהר: חלק א מז ב]on: '...and all the host of them...וכל צבאם...' [Gen 2:1] says these are the '70 faces of Torah-- שבעים פנים לתורה ' _____ See also Osiyos deRabbi Akiva & Bamidbar Rabbah 13.

[2] This is the 13th of the 13 principles of Torah interpretation in the Beraisa of Rabbi Yishmael.

WHY THE TORAH BEGINS WITH A ב (BES)

AND NOT WITH A כ (CHOF) or א (ALEPH)[3]

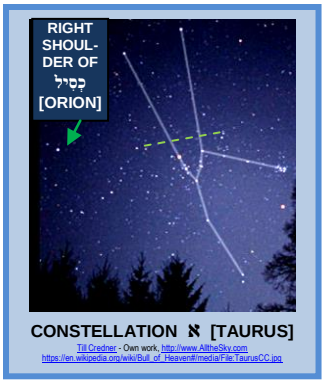
We learn that the Torah begins with a ב (Bes) to teach us, among other things, that if we ask what is above the highest, below the lowest or before the beginning described in the Torah, we will not get too far. Those directions are blocked by the arms and back of the letter bes with which the Torah begins[4]. If, however, we ask: What is the direction that HaShem wants us to go? That way is open before us – as the letter bes is open in the direction of the whole of the Torah. This answer is obviously incomplete. It doesn't tell us why the Torah does not begin with a כ (chof) which would appear to do the same thing[5].

The ב and כ are different in at least one respect that's directly relevant here. The ב has a little tail in the back. This may be to suggest that if we really try hard to find out what happened before what's written in the Torah, we'll get somewhere – into the tail of the ב . If we try even harder, we'll get to the point at the end of the tail in the ב. How-ever hard we try we won't get beyond this point – to the ultimate beginning of an eternal universe.

There will always be a space between what we can discover in the point of the tail of the ב and the unspoken and unwritten first letter – the א . The unspoken and unwritten Aleph represents Anochi --- God. It represents the infinite and ineffable qualities of the world before and beyond what we can learn directly. Even so, the shape of the א suggests something about this ineffable world. It shows that, despite seeming to go in every direction, there was and is a primary trend. That trend goes from the lower right to upper left -- in the direction of Shamayim and the Torah.

HOW DID THE א ALEPH GET ITS NAME?

The letter א-Aleph has an unusual shape- as already noted above. But what about its name? And why is that name associated with the first letter of the Aleph-Bes? It appears that both its name and shape are associated with large horned cattle[6]. It appears very dramatically in the zodiac constellation Taurus – the Bull – as can be seen in the photo and outline of the constellation below. The two upper stars- forming the top of the א and the tips of the bull's horn's- also lie in the Milky Way – tho' it's too faint to see in this photo. The tip of the left horn is the star Elnath – -[AKA, β [Beta] Tauri], the closest bright star to the "anticenter" of the Milky Way.[7] The tip of the lower right leg of the א is the constellation כימה [Pleiades][8]. At the time of the creation of the Aleph-Bes, the constellation that forms an א in the night sky began to rise just before dawn –about an hour before the sun- at the time of the Spring Equinox[9] – the start of the year for the Jewish People. Maybe this first place among the constellations at the start of the year made it also best for the first letter of the Aleph-Bes.[10]



CONSTELLATION א [TAURUS]
Till Credner - Own work, http://www.AlltheSky.com
https://en.wikipedia.org/wiki/Bull_of_Heaven#/media/File:TaurusCC.jpg

Just as we learn, [Br. 2:19-20] that Adam named the animals – including those that are mentioned mutlple times in the Torah itself – and those – like the cat[11] -- that aren't mentioned in the Torah at all, so also we can learn that Adam named the letters of the Aleph-Bes.

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[3] There are at least ten other explanations of why the Torah begins with ב that have been published in other commentaries. [#1, see p. 1, notebook version of this sefer] After writing this, I found a sefer: "Why the Torah Begins With the Letter Beit" by Michael J. Alter; 340+p., Jason Aronson, c'98. It did not include this chidush.

[4] From Chagiga 2.1, Talmud Yerushalmi, in response to a Mishna on prohibited lines of inquiry:

ר' יונה בשם ר' לוי בבי"ת נברא העולם מה בי"ת סתום מכל צדדיו ופתוח מצד אחד כך אין לך רשות לדרוש מה למעלן ומה למטן מה לפנים ומה לאחור אלא מיום שנברא העולם ולבא אומרין לבי"ת מי בראך והוא מראה להן בנקודה ואומר זה שלמעלן ומה שמו והוא מראה להן בנקודה שלאחריו ואומר ה' שמו אדון שמו

http://www.mechon-mamre.org/b/r/r2b02.htm

"R. Yona said in the name of R. Levi, 'The world was created by the letter ב.' As ב is closed on all sides except one, so you have no right to investi-gate what is above, what is below, what went before or shall happen after-word, only what has happened since the world [and its inhabitants were created]. If the letter ב was asked 'Who created you?' it would point with its upper stroke and say, 'He above.' [If asked] 'What is his name?' it would point with its lower projection to the right [toward the letter Aleph] and say, 'Hashem is his name, אדון ADON is his name.'" *Transl: Jacob Neusner, Talmud Yerushalmi V, 20, p. 51-2, 1982. Brackets in original, Hebr. added.*

[5] When 1st written, I didn't know the same Gemara gives an explanation of the use of the point at the back of the ב – as quoted above.

[6] אֲלָפֶיךָ [your cattle] Dev. 7:13, 28:4,18,51,Is.30:24,Pr.14:4,Ps.8:8

[7] Direction to nearest outer edge of Galaxy, on line from center of Galaxy. Bottom of left horn is bright, reddish star, Aldebaran. A line thru bottoms of 2 horns, extended to left reaches Orion. The dashed green line – added by ASA – connects 2 small star clusters making the 'Aleph' more like the "ksav Ivri":see p 224 #6

The original, Ksav Ivri, form was centered on the head. The millennium later Ksav Ashuris form was centered on the whole bull, reflecting the change in its position.

[8] See p.18-19,166,186-9

[9] See p 166.

[10] SEE: A CLOSER LOOK AT THE ALEPH-BES, p 224 & TRUE AND FALSE- EMES AND SHECKER

[11] Pointed out to me by Yisroel Weil, author of a study of possible ancient links between Hebrew & hundreds of other languages.

FROM THE DUST OF THE EARTH
...AND
TO DUST YOU SHALL RETURN[12]

The idea that HaShem created Adam "from the dust of the earth"[13] presents difficulties to many who look first to scientific explanations of the origin of life. This statement, "from the dust of the earth", however, is clearly not intended to be the complete story. It continues only a few paragraphs later with the expression; "…for dust you are and to dust you shall return."[14-A] This latter expression, taken by itself, doesn't normally arouse controversy. It also provides us with a way to reconcile the seemingly irreconcilable traditional and "scientific" views of the creation of Adam -- and of life in general.

When it comes to a human body – or the body of any living creature - returning to dust, we're free to observe what happens. The process looks nothing like what we'd imagine if we took the simple image of HaShem creating Adam from the dust of the earth and just reversed it. If we were to take a statue made of clay and return it to dust, we'd probably first break it up into little pieces, then mix it with a lot of water, spread it out in a thin layer to dry in the sun and watch the wind blow the dried dust away.

What actually happens - what we see -- in the case of actual human bodies and the bodies of other living things, isn't at all like this. Instead, we find an enormously complex process of decay -- involving an extended period of time and multitudes of small –even microscopic - creatures. Yet the Torah describes these readily observable complex phenomena with the simple expression: "to dust you shall return."

This should tell us that, when the Torah uses similarly spare language to describe the process of the creation of Adam "from the dust of the earth", it may also be describing a process that is not what we usually think. It might be nothing like what we'd imagine would be involved in creating a model of a man out of clay. Instead of a sculptor shaping a soft mixture of earth and water, we might reasonably expect a process analogous to the observable process of decay. This would involve an enormously complicated process taking place over an apparently extended period of time and involving multitudes of small creatures – including many that are microscopic. The process of creation in this interpretation would also be consistent with the major elements of the "scientific" – observation based -- view of creation[14-B,C].

Cont. : Dust to Dust p. 212. See: WHY THE TORAH BEGINS WITH A ב ...; RINGS OF GOLD; see footnote 614-B,C,D, E; MIDOS ON THE METRO: SUBWAY LOVE AND THE EXPANS'N OF SPACE-TIME' & THE FOUNDATIONS OF THE WORLD

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[12] #2, p2, see also p. 93, notebook version.

[13] וַיִּיצֶר יְהוָה אֱלֹהִים אֶת-הָאָדָם, עָפָר מִן-הָאֲדָמָה, וַיִּפַּח בְּאַפָּיו,
נִשְׁמַת חַיִּים; וַיְהִי הָאָדָם, לְנֶפֶשׁ חַיָּה.

Then the LORD God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul. [Gen 2:7]

We may also note here how Hashem created the reproductive process in Adam – in the Image of God. It isn't analogous to God creating a Golem of clay. It isn't a man & woman getting together & agreeing to shape a golem with their hands & – together – blowing into it the breath of life. It involves growth from a microscopic cell, to a baby, to an adult.

There's a related issue: the near certainty of the repeated occurrence of what may at first appear to be extremely improbable events. E.g.: there are viruses that kill bacteria. Specific viruses kill specific bacteria. Out of E9 bacteria of a given type that are ordinarily killed by a particular virus, there may be only one that's resistant to the virus – due to an extremely rare 'error' in its creation. That one will replace a billion in ~30 doublings – 30 generations. For typical bacteria this would take ≤1 day.[a] As a result of the continual occurrence of such rare 'errors', they don't wipe each other out & there are ~$5E^{30}$ bacteria [~$.5\mu^3$ea,] [b] & ≥$5E^{31}$ of the much smaller [$.0005\mu^3$ ea.] viruses[c] on Earth. The time to replace 1E9 people – with 30 doublings in 30 generations - would be ~1K yrs.[d]

a. "For most known bacteria that can be cultured, …[doubling times] range from about 15 minutes to 1 hour". 'Todar's Online Textbook of Bacteriology', Kenneth Todar, PhD, Ch. 5,p3 'The Growth of Bacterial Populations' accessed 5/15/'15. **b.** 'Prokaryotes: The unseen majority' *W. B. Whitman, D. C. Coleman, W. J. Wiebe Proc. Natl. Acad. Sci. USA, v.95, p. 6578–83, 6/'98;* **c.** 'Viruses and Nutrient Cycles in the Sea' *S. W. Wilhelm, C. A. Suttle, BioScience V. 49, p781-8, 10/'99.* **d.** This assumes, as we have today, enough resources for well over a billion people – & also, the people want to have children & get along with each other.
[a. _____ b._____ c._____]

14-A [GEN 3:19] בְּזֵעַת אַפֶּיךָ, תֹּאכַל לֶחֶם, עַד שׁוּבְךָ אֶל-הָאֲדָמָה, כִּי
מִמֶּנָּה לֻקָּחְתָּ: כִּי-עָפָר אַתָּה, וְאֶל-עָפָר תָּשׁוּב.

In the sweat of thy face shalt thou eat bread, till thou return unto the ground; for out of it wast thou taken; for dust thou art, and unto dust shalt thou return.

14-B 1. If we didn't already have an observation based idea of the process of our development, this "dust:dust" analogy should inspire us to look for one. 2. This type of analysis may also be applied to the development of language – where we have Adam naming the animals – all in one 'day':[GEN 2:19]

וְכֹל אֲשֶׁר יִקְרָא-לוֹ הָאָדָם נֶפֶשׁ חַיָּה, הוּא שְׁמוֹ."...

And out of the ground the LORD God formed every beast of the field, and every fowl of the air; and brought them unto the man to see what he would call them; and whatsoever the man would call every living creature, that was to be the name thereof.

14-C Midrash Rabbah 24:7, at 1st mention of 'book – סֵפֶר' or writing [GEN 5:1]:

זֶה סֵפֶר תּוֹלְדֹת אָדָם בְּיוֹם בָּרֹא אֱלֹהִים אָדָם בִּדְמוּת אֱלֹהִים עָשָׂה אֹתוֹ:

This is the book of the generations of Adam. In the day that God created man…

sees Adam teaching his decendents how to write a book:

רבנן אמרין: אפי' סירגולו של ספר אדם הראשון למדו, שנאמר: זה ספר, הוא וסירגולו.

…it & its rulings. [i.e. straight lines]. How much more so the letters? This suggests that names of letters would develop the same way – helping to explain why, though ו, מ & נ begin & end with one sound, we have *gimel*, instead of *gog*, *somech* instead of *sus*, etc. Similar reasoning should be applicable to other elements of the story of Adam—e.g. the "tree", clothing, expulsion, Cain & Able, etc. See footnotes 122- B.8; 329-B See also Sanhedrin 104a; & see: FROM THE COPPER SNAKE TO THE TREE OF LIFE

WHEN DO WE SAY THE BROCHA ON PRU URIVU[15] "BE FRUITFUL AND MULTIPLY"?[16]

There are many mitzvahs where we are required to say a brocha before we do them. There are other actions where we say the brocha after we do them. There are still others where we don't appear to say any brocha at all. When honoring our parents, for example, it seems that we don't say any brocha. We learn that if we had to say a brocha each time we did something that honored our parents we would honor them less – saying the brocha would interfere with our acting quickly to do what our parents want. Similarly, we might imagine that stopping to say a brocha while we are engaged in the mitzvah of "pru urivu" – the mitzvah to "be fruitful and multiply" -- would interfere with what we are doing – and diminish it in some way. The usual understanding is that, for this reason, among others, we don't say a brocha on pru urivu.

In reality, we do say the brocha – but at a completely different time and place from what we might at first imagine would be the time and place to do it. If we look at the actual mitzvah, we can see that HaShem is calling the couple, Adam and Chava, to be fruitful and multiply. What they are to multiply need not be understood as being individual human beings – but married couples like themselves. It is such married couples that are fit for procreation – it is such married couples that we are to multiply and it is such married couples that are truly in the image of God.

With this understanding we can see when it would be appropriate to say the brocha on pru urivu – and when we actually say it. We say it at a Chasenah - a wedding– where we unite a man and woman to be a couple -- like Adam and Chava – in the image of God. The brocha is said by the tsibor – the congregation -- not just by the couple. The tsibor – by their witness and support -- is a key participant in creating the couple – is multiplying fruitful couples in the world. The tsibor and the couple say the brochas together – and they together are in the image of God -- in their capacity to create what God created – a man and woman united as one.[17]

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[15] Genesis 1:22, 9:1, 35:11 (Gen. 35:11 is not written in the plural in the Hebrew. It's addressed to Jacob.)

[16] This was conceived while sitting near the head table at a Shabbes sheva brochos at D'var Yerushalayim in Har Nof, Jerusalem , Israel, in ~1997. The expression on my face as I thought of this must have suggested to the father of the calleh that I had come up with something very worthwhile. Without warning, he got up and said: " Now Rabbi Avroham Shlomo Adler will say a dvar Torah." He knew that I was not a Rabbi. I got up and said what I had just thought of – and what I have written above – in Yiddish – before about 90 people, roughly half of them women and girls. It put smiles on the faces of the Chasen and Calleh. One of the grandfathers -- in a shtreymel and capote, came up to me and kissed my hand. They liked what I said. [#3, p3, notebook version of this sefer]

[17] The idea of acting in the image or in imitation of God comes from Deut 28:9:

יְקִימְךָ יְהוָה לוֹ לְעַם קָדוֹשׁ, כַּאֲשֶׁר נִשְׁבַּע-לָךְ: כִּי תִשְׁמֹר אֶת-מִצְוֹת יְהוָה אֱלֹהֶיךָ וְהָלַכְתָּ בִּדְרָכָיו.

"…and walk in His ways." **It also comes from Deut 30:16:**

אֲשֶׁר אָנֹכִי מְצַוְּךָ, הַיּוֹם, לְאַהֲבָה אֶת-יְהוָה אֱלֹהֶיךָ לָלֶכֶת בִּדְרָכָיו, וְלִשְׁמֹר מִצְוֹתָיו וְחֻקֹּתָיו וּמִשְׁפָּטָיו; וְחָיִיתָ וְרָבִיתָ-וּבֵרַכְךָ יְהוָה אֱלֹהֶיךָ, בָּאָרֶץ אֲשֶׁר-אַתָּה בָא-שָׁמָּה לְרִשְׁתָּהּ.

"…to love the LORD thy God, **to walk in His ways**, and to keep His commandments …"

FILL THE EARTH

II GATEWAY TO NATURE - NURTURE QUESTIONS

If Adam & Chava differed from each other only in gender, their descendents, even in the first generation after them, would be very different from what we have today. Boys would all be exact copies of Adam & all girls would be just like Chava.

The fact that we're so different from each other in almost every measure that makes us human says something both about Adam and Chava and about what our work is here on earth. Our very human diversity means that Adam and Chava were made so that many different genes had a bearing on most of the things that make us human.

This built-in diversity could not be seen in the single example of Adam and Chava. For the full range of human potential to be made manifest in the world, all of the different viable combinations of genes had to come into play. This meant that Adam and Chava would have to have children – literally billions of children. Since human beings are not designed so that a single couple can parent and care for billions of children, it meant that many generations – history -- would be needed to create these children – all in the image of God – and literally fill the earth[18].

The earth, however, is not uniform in climate or geography and even these change with time. Some of these changes are the result of human action – human history[19-A]. This environmental and historical diversity engenders an even greater range in what it means to be a human being.

This is not a game though, to see how many different kinds of people we can make. Our differences give us complementary abilities, sensitivities, and experiences. Our diverse group histories and varied personal upbringings help "flesh-out" our humanity. We're able to help each other in unique ways because of our uniqueness. We can teach each other about different aspects of the world because we see things differently and have seen different things.[19-B]

The acts of kindness that we do for each other – in assisting and teaching each other – are part of the plan of creating human beings in the image of God. As God is kind, so we are kind. As man and woman are necessary – in their differences and in their union – to manifest the love and creativity of God -- so our myriads of human differences -- and their ultimate unification-- are necessary to teach us the breadth and depth of God's image in the realms of kindness and patience and mercy.

[18] Gen. 1:28 'Be fruitful, & multiply, & fill the earth...פְּרוּ וּרְבוּ וּמִלְאוּ אֶת-הָאָרֶץ'

[19] See also in this sefer: A. footnotes 329.1 & 660.A B. The Migdol Bavel Or 'Tower Of Babylon', The 70 Languages...A "Censorship Resistant" Information Environment; The Color Of Kindness; The Dimensions Of Wisdom

THE WORLD OF TRUTH

THIS PIECE SHOULD BE BEFORE "THE FOUNDATIONS OF THE WORLD"

A common expression for the place we go after our '120 years' of Life is ' The World of Truth': עולם האמת [Olam Ha Emes].[20-A] So, we might think the world we live in: 'This World' עולם הזה [Olam HaZeh] is in some way the opposite. If the opposite of truth is falsehood- שקר [shecker], this must be the World of Falsehood- עולם השקר [Olam Ha Shecker][20-B]. But the word that's most often paired with Emes in Torah isn't שקר.[21] It's Kindness -חסד [Chesed]. Since חסד always precedes אמת in the 15 times these words are paired,[365] the Torah is hinting that עולם הזה, This World – the World preceding עולם האמת, isn't עולם השקר. It's עולם החסד - The World of Kindness.

Supporting this, we also learn: "The world stands on three things: Torah, Avoda & Gemilus Chasadim.[63-B] Since both Torah and Avoda [the latter as 'Angels' serving Hashem] 'stand' in Three Worlds: the World before the Creation of This World, in עולם הזה and in עולם האמת,[75] just one of these three pillars stands only in עולם הזה: Gemilus Chasadim. It's one of the three defining traits of a Jew[22] and the Chofetz Chaim says that חסד-kindness- "is the essence of Torah".[388]

Such a characterization of Torah, Jews & עולם הזה, helps explain the age-old struggle between the Jewish people & עֲמָלֵק Amalek[23-[all].] Amalekites prey on the weak.[23-C,271] Jews help the weak. As we're all at some time weak– as babies, when sick or old, or even when sleeping or just underinformed - we're all potential prey to each other. In an Amalakite World we live in fear of our neighbors. In עולם החסד - the World of Kindness – the World of the Jewish People -- we're all potentially beneficiaries of each other. We come to love each other[323] and come closer to God[388-2]. This is the World that begins and ends with kindness- clothing the naked and burying the dead[24]. This is the World of Torah – the World of the Derech Hashem.[25]

[20] A. עלמא דקשוטא:World of Truth: after death B. עולמ דשקר World of Falsehood: world of the living. Vayikra Rabbah 26:7, [Witch of Endor, I Sam 28:16-18],Jastrow+, Sefaria _____ _____

[21] Emes [or Emuna, etc.] & Shecker: rarely found contrasted in a single sentence in Torah & the order isn't constant, e.g.: Pr. 11:18 שקר→אֱמֶת; Pr. 12:19: אֱמֶת→שֶׁקֶר; Je 9:5 שֶׁקֶר→אֱמֶת; Br.21:23 חֶסֶד→שָׁקֶר; Ps.89:33:וַחֲסָדִי לֹא־אָפִיר מֵעִמּוֹ וְלֹא־אֲשַׁקֵּר בֶּאֱמוּנָתִי [checked Strong's H8266,7]

[22] Yevam. 79a; Also, a Jew is a גבר , acronym *for Gomlei chassadim* גּוֹמְלֵי חֲסָדִים *, Bayshanim* בַּיְישָׁנִין *& Rachmanim* רַחְמָנִים . Rambam, Mishneh Torah, Bk V, Ch 19

[23] A Ex. 17:8-16, B Bam. 24:20, C Dev. 25:17-19, D Jud. 3:13, E 1 Sam 15; F 28:18

[24] Gen 3:2, Dev 34:6

[25] This piece was inspired in part by a talk I had with a Nazi, in ~'87, when I went to the Nazi propaganda film, "Triumph of Will" at Harvard. We were told the film was never shown on TV. An older man, in front of me on the line for the film, had a book with the word Hitler in the title. I couldn't see the rest of the title – & started to talk with him, saying: ~'Wouldn't it be good if we could prevent such things – [the holocaust] -in the future?' He said, ~"No. We should finish the job" – of killing Jews. He was a Nazi, who came to reminisce. He explained ~"We're not criminals. We're aiming to make a better world. We understood that for a better world we need better, stronger people. For such a better race, we have to kill the weak. But Jews are genetically predisposed to be kind & want to help the weak. So, to strengthen the race, we had to first kill the Jews." He said this in all sincerity – with a straight face – seeing that I was a religious Jew. He added that the usual response of people when he told them what he'd just told me was to try to spit in his face—or just walk away. He said he wanted to be my friend! I told him if he wants friends he could go to the Society of Friends – Quakers – who had a meeting house nearby. In the 1st Nazi extermination program --targeting the disabled - scholars say ~200,000 were murdered by medical professionals [10/'39-end WWII] "Euthanasia Program" Holocaust Encycl., U. S. Holocaust Memorial Mus'm, _____ Henry Friedlander "*From Euthanasia to the Final Solution*"_____ *The Origins of Nazi Genocide: From Euthanasia to the Final Solution*. Chapel Hill: U. of N. Carolina Pr., '95. This could be a II GATEWAY TO HOLOCAUST STUDIES. See also in this sefer: 1. DOCTORS IN GEHENOM 2. THE FOUNDATIONS OF THE WORLD 3. LOVE THY NEIGHBOR: ANTIDOTE TO THE TRAGEDY OF THE COMMONS II GATEWAY TO GLOBAL ECOLOGY 4. THE COLOR OF KINDNESS 5. THE DIMENSIONS OF WISDOM

HOW DID THE GENERATION OF THE MABUL – THE FLOOD - GET SO BAD?[26]

AND

HOW DID THE PEOPLE OF S'DOM GET SO BAD SO QUICKLY?[27]

If we knew the answers to these questions, we would be better able to avoid such outcomes in our own times.

In the case of S'dom, there are some possible hints. The first comes when the area is described, in Gen 13:10:

וַיִּשָּׂא-לוֹט אֶת-עֵינָיו, וַיַּרְא אֶת-כָּל-כִּכַּר הַיַּרְדֵּן, כִּי כֻלָּהּ, מַשְׁקֶה--לִפְנֵי שַׁחֵת יְהוָה, אֶת-סְדֹם וְאֶת-עֲמֹרָה, כְּגַן-יְהוָה כְּאֶרֶץ מִצְרַיִם, בֹּאֲכָה צֹעַר.

And Lot lifted up his eyes, and beheld all the plain of the Jordan, that it was well watered everywhere, before the LORD destroyed Sodom and Gomorrah, like the garden of the LORD[28-A], like the land of Mitzraim, as thou goest unto Zoar.

It's depicted in the verse as "...well watered everywhere…like the land of Mitzraim...".[28-B] Mitzraim was watered by the foot -- by irrigation[28-C]. Presumably, S'dom was also. This means that those who were most adept at developing the irrigation systems[28-D] and their associated technologies would have come to the fore in that society.

Such people - the inventors and technological innovators - are usually the younger adults[28-E] - not the grandparents. Their horizon is limited by their youth and inexperience. It is all too easy for them to imagine that the wealth that grows out of their technology and work is entirely due to their own efforts and that Ha-Shem has nothing to do with it. With such a world view, it would be easy for them to take the next steps -- to think of those who might come to visit as parasites -- and make kindness to strangers a capital offense[29].

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[26] This was written in response to a D'var Torah on Parshas Noach, 5769 (10/09) by Rebitzin Esther Jungreis. In her talk, she painted a relatively negative picture of Noach. (see#12, p25; #77, p142 and #50, p22, #83, p145 in Sefer Chidushei Torah notebook.)

[27] According to Seder Olam, Abraham was 48 at the time of the dispersion, 1996 years from the creation of Adam. ~ 25 years later, when Lot came to settle in Sodom, we learn in, Gen. 13:13: "Now the men of Sodom were wicked and sinners against the LORD exceedingly." In another ~26 years, they came to attack and kill Lot for offering hospitality to strangers.

[28-A] It's instructive that Lot mentions "the garden of the LORD" –gan Eden – first. Though our sages see in this whole verse several allusions that point to Lot's moral shortcomings [Horayos 10b, Midrash Rabbah 41:7], none explain why Lot puts Gan Eden before Mitzraim. It apears from this ordering of words & Lot's subseqeusnt behavior: risking his life to provide hospitality to & save the lives of strangers – that he was certainly worthy of the image of Avroham – even if the image was small & dim compared with the original. Lot was seen by Avroham as a tsadik in the midst of Sodom – even if compared with Avroham himself, Lot was not much of a tsadik.

[28-B] Chazal explain the need to incl. Mitzraim, by saying the ref. to Gan Eden was to trees & the ref. to Mitzraim was to plants like wheat [Horayos 10b] – but R. Yehuda said that the "tree of knowledge" was wheat [San. 70b] – so they understood wheat also grew in Gan Eden.

[28-C] Dt. 11:10...וְהִשְׁקִיתָ בְרַגְלְךָ …and didst water it with thy foot…"

[28-D] That Mitzraim was watered by irrigation – also helps explain a special difference between the customs- minhagim מנהגים of Ashkenazim & Sephardim today. On Peysach, the former don't eat kitniyos – lentils, beans, peas & the like--while the latter do. At the time kitniyos rules were codified among Ashkenazim [*~600 yrs. ago --~150yrs. before Rama's part of Shulchan Aruch [See footnote 279 & see "Kitniyos", R. Moishe Dovid Lebovits, Rev. by Horav Yisroel Belsky. Halachically Speaking* _____] the Sephardim were living where field crops – like wheat --were watered by irrigation. Each year the great rivers – the Nile, Tigris & Euphrates -- would renew the fertility of the land with minerals from the mountains.

In the lands of the Ashkenazim – mostly Central & Eastern Europe –field crops were rain fed. If wheat were planted on the land for many years without a break, the land would become exhausted. To prevent this, Europeans used "rotation of crops", with a cycle of a few yrs of grains followed by a yr of legumes – kitniyos. Nitrogen-fixing bacteria assoc. with legumes would restore N to the soil – taking it from the air. So, the land would have seeds of both wheat & legumes in it when legumes were growing. At harvest, wheat might be mixed together with legumes – leading to possible chometz in the latter.

That pine nuts aren't considered kitniyos is an indication that it isn't the small size of the ediple part that's the primary concern [kitniyos means 'small things']-- that they may be mixed together in sacks used for chometz in prior years – but how they grow. Pine nuts grow on trees & wouldn't get mixed with wheat in the course of harvesting. For differences in matzah – cracker like matzah of Ashkenzim & pita-like matzah of some Sefardim & Temeni – see footnote 157

[28-E] Steve Jobs [2/24/1955 –10/5/2011] founded Apple at 21. Edwin Land [May 7,1909 –3/1/'91, see p. 36, note D & see footnote 301], filed for his patent on a synthetic sheet polarizer 4/26/'29, when he was not yet 20, [US Patent #1,918,848 _____] "…on average, the great minds of the twentieth century typically became research active at age 23 at the start of the twentieth century, but only at age 31 at the end—an upward trend of eight years. Meanwhile, there has been no compensating shift in the productivity of innovators beyond middle age." p2 [The increase in age is attributed to more time necessary to learn the basics of the field.] B. F.Jones, "Age And Great Invention" The Review of Economics and Statistics, v. XCII #1, 2/'10 _____

[29] Sanhedrin 109a-b has several accounts of the perverted laws of Sodom, including the story*: A certain maiden [a daughter of Lot] gave some bread to a poor man, [hiding it] in a pitcher. On the matter becoming known, [to the officials of Sodom] they daubed her with honey and placed her on the parapet of the wall, and the bees came and consumed her. Thus it is written,* "And the Lord said, The cry of Sodom and Gomorrah, because it is great." GEN.18:20 _____

The second hint supports this view. When the people of S'dom are about to attack the house of Lot , we read, in Gen. 19:4:

טֶרֶם, יִשְׁכָּבוּ, וְאַנְשֵׁי הָעִיר אַנְשֵׁי סְדֹם נָסַבּוּ עַל-הַבַּיִת, מִנַּעַר וְעַד-זָקֵן: כָּל-הָעָם, מִקָּצֶה.

But before they lay down, the men of the city, even the men of Sodom, compassed the house round, from young to old, all the people from every quarter

The Torah says that they came "from young to old..." The young, inexperienced and immature were in the lead on this. The elders had come to follow the young.[30-A]

In the case of Noach, it is easy to be critical of him: Why didn't he cry out and plead for the people of his generation to repent -- or plead with Hashem to spare them? Yet Hashem understood that he was the best of the generation and worthy of being the ancestor of all of humanity.

Hashem tells Noach and all future generations:

כִּי-אֹתְךָ רָאִיתִי צַדִּיק לְפָנַי, בַּדּוֹר הַזֶּה...

…for thee have I seen righteous before Me in this generation. **[Gen 7:1]**

Hashem says: "in this generation,"[30-B] **to make it clear that the environment in which Noach lived was so morally corrosive that it would have destroyed the moral fiber of all but the greatest of the complete tsadikim.**

But, again, how did that generation get so bad? Could it be that Noach's own invention-- the plough -- and other technologies that went with it[31-A]**, had the same effect as the irrigation technology had in S'dom? Could these technological improvements have brought the young and inexperienced "inventors" -- like Noach himself -- to the fore -- displacing the zikanim? If so, we must see Noach as even greater than he'd otherwise be. He resisted the temptation that his contemporaries didn't -- to forget about HaShem and look upon the inventors as the saviors of the world.**[31-B]

____ See also, in this sefer: **To Move the Earth**

30-A The same expression "...from young to old…מִנַּעַר וְעַד-זָקֵן ..." is also found again only in Josh 6:21 – at the destruction of Jericho & at Meg. Esth 3:13 - at the decree of Haman to destroy the Jews. This suggests that in both places, the old were following the young – leading to a society that would be --or would ordinarily have been – overthrown like Sodom.

30-B In Gen 6:9, we have: ...אֵלֶּה תּוֹלְדֹת נֹחַ--נֹחַ אִישׁ צַדִּיק תָּמִים הָיָה בְּדֹרֹתָיו These are the generations of Noah. Noah was in his generations a man righteous and whole-hearted…" At Gen 7:1, God could have said "your generation/s" instead of "...for thee have I seen righteous before me in this generation - ...כִּי-אֹתְךָ רָאִיתִי צַדִּיק לְפָנַי, בַּדּוֹר הַזֶּה" God chose language more conducive to Noah's modesty.

31-A "Noah…invented the plough, the scythe, the hoe, and other implements for cultivating the ground." The Legends of the Jews, L. Ginzberg, [1909] ____ from: Midrash Tanchuma, Gen. 11

31-B Dovid Yitschok Milton of Ohr Someyach, asked how this ties in with the three primary sins attributed to the Dor HaMabul: theft, idol worship & perverse relations with people & animals [Gen Rabbah 26:5 on Gen 6:2 & Gen Rab.28:8 on Gen 6:7 – cited by Rashi]. It may be that when people think they are the creators of their own wealth – with little sense of the past or future, they may also come to think that "might makes right" & that the only value in life is what you can get out of it in terms of ordinary pleasures. This could lead to theft – including theft of people -- enslavement—[Gen 6:11 וַתִּמָּלֵא הָאָרֶץ חָמָס – *and the earth became full of robbery* Rashi cites Jonah 3:8 & Sanh 108a] –when the strong think they can get away with it; to the unrestrained pursuit of pleasure without regard to family life-*arayos*; & ultimately, to the self worship that is at the heart of idolatry-*avoda zara* [וַתִּשָּׁחֵת -*was corrupt* -Gen 6:11 -Rashi – from Sanh 56b,57a]. Question asked & answered after the Chasenah of Dovid & Chana Sara Brody, 30 Tishrei, 5778, Jerusalem.

31-C As we've seen [30-B], even before the instructions to build the ark, *"Noah was in his generations a man righteous and whole-hearted…"* This suggests at least 2 generations before he started to build the Ark. If 'generations' means epochs, the 1st epoch would've been before Noah designed new farm implements [25-A] to relieve humanity of the curse of Adam. This was done out of Noah's Tsidkus – to help people – though it may've made him both rich & famous. It may've been his 1st Kiruv program – to give people the leisure to think about God –& relieve them of the pressure of intense competition. The result was that people used their leisure to pursue their lusts. His 2nd Kiruv program was during this time of "lust" – before he started building the Ark. He remained a model of Derech Hashem in the midst of corruption. His 3rd Kiruv program was during the 120 years of building the Ark – where the Ark was a physical reminder of impending disaster.

31-D Avroham also had at least 3 Kiruv programs. 1st when a contemporary of Nimrod—during tower building – when he was all but defeated by Nimrod's demagoguery. 2nd was successful -- under the 70 languages & 3rd when Nephew, Lot, lived in Sodom for a generation. It may be assumed that the Sodomites had a single language – & that Lot was defeated there by demagoguery just as Avroham & Noah before him had failed in such an environment. [said at R. Biderman's, 2 Hagiz, leyl Shab. Lech L'cha, 5778.] Avroham in the post Mabul world also had an easier time than Pre Mabul Noah, as the people in the post Mabul world were all descendants of Noah the Tsaddik on the male side. Male decendents of Murderer Cain were dead. [This last point was thought of & said over to R. Yitzchak Breitowitz after his parsha drasha, leyl Shab. Noach, 5779, at Ohr Someyach.]

Further, he was a man of his times[31-C,D]. He understood what might work with these people as far as kiruv was concerned. He built the Ark in the midst of the people -- not in the wilderness or on a mountain top. He relied on his reputation as a technological leader to get people to ask him what he was doing -- and ultimately to give them a chance of seeing the error of their ways and the importance of repentance. He practiced this kiruv for a 120 years[32]- with tremendous patience - and the result of all this was that he wasn't even able to preserve the tzidkus of all of his own children - so corrosive had the environment become[33].

After the Mabul, HaShem gives Noach permission to return to his wife and to be fruitful and multiply. Yet, perhaps considering the devastation of the earth, Noach does not immediately return to his wife, but first builds an altar to HaShem -- and his offerings are well received.

Though the post-Mabul generation is given permission to eat animal flesh, Noach chooses to become a farmer -- not a hunter -- and to plant something that would ultimately be a source of delight to subsequent generations of humankind. Must we understand that he sought to become drunk? Could it not be that he became drunk as a result of being the first person -- ever -- to make wine -- and did not fully appreciate the potential for adverse consequences? [34]

The lesson for our time is to be particularly careful to follow the lead of our G'dolim -- and not of the youthful innovators; to recognize the morally corrosive effect of an environment dominated by such Nars[35]; and that the beauty and expansive innovation of Yaphes must always dwell in the tents of Shaim.

One may reasonably ask how Mitzraim avoided the fate of S'dom and the Dor HaMabul. The answer is the Mitzrim were not able to control the Nile as much as the Sodomites were able to control the water in their much more limited area. The Mitzrim were also subject to having their crops

"...שְׁדֻפוֹת קָדִים..." "...blasted by the east wind..." [Gen 41:23 & 27]

– as in the second part of Pharaoh's dream. It was still possible for the Mitzrim to see the Hand of God in their lives when the Nile either flooded too much or did not flood enough and/or when the east wind blasted their crops – and they could do nothing much about it. There was enough of a technology based leadership to bring Mitzraim to a state of decadence but not to a state of complete destruction. One may also ask, if there is such "geographic determinism" why should the people of S'dom and the Dor HaMabul be punished. The answer might be that they had the examples of Noach, Abraham and Lot[36], and chose not to head them.

See also, in this sefer: 1. To Move the Earth, 2. From the Mountains of Ararat To The Top Of Pisgah II Gateway To Climatology... and **3. From the Copper Snake to the Tree Of Life** II Gateway to Archeology...

Thou shalt rise up before the hoary head, and honour the face of the old man..." VAYIKRA **19:32**

[32] **From: Midrash Tanhuma, Noach, Chapter 5, _____**

[33] **However, the Zohar faults Noah, saying that had he prayed and wept to God, imploring Him to be merciful and asking for clemency for the people, God would have listened and the Flood wouldn't have come. _____ Check original source.**

[34] **It could also be that he'd completely abstained from wine during the whole year – or even during the entire period in which he was building the Ark– & he'd become hypersensitive to its effects. In this case, he'd have been the first to experience such a sensitization effect.**

[35] **To help us avoid the problem of S'dom we have:**

– מִפְּנֵי שֵׂיבָה תָּקוּם, וְהָדַרְתָּ פְּנֵי זָקֵן; וְיָרֵאתָ מֵאֱלֹהֶיךָ, אֲנִי יְהוָה.

[36] **A. On the expression,** GEN13:8: כִּי-אֲנָשִׁים אַחִים אֲנָחְנוּ. "...For we are brethren." **Midrash Rabbah 41:6, says Lot looked like Abraham – so the S'domites had an even stronger reminder - for a generation. As already noted, Lot was tsadik enough that he risked his life to help strangers.**

B. The contrast between the appearance of the angels as 'men' to Avroham & as "angels" to Lot,[Gen 18:2 & 19:1]might be an indication of Hashem's mercy – making it easier for Lot to choose to risk his life to save them.

C. His daughters acting without consulting their father – while rationalizing it as a noble thing to do [Gen 19:31-8] shows that they were true children of Sodom – thinking that they know everything & not consulting with elders – even with one who had just helped to save their lives.

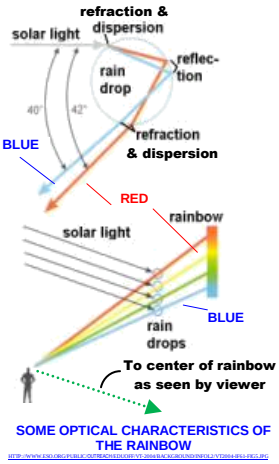
D. Even so, both thought they were saving the world & merited to be the "mothers"– through David & Solomon –from whom the Moshiach would descend. Horayos 11a

THE KESHES B'ANON – THE RAINBOW IN THE CLOUDS[37]

GATEWAY TO REPENTANCE AND CORRECTION OF THE WORLD

Π GATEWAY TO PHYSICS AND THE EDGE OF UNKNOWING[38]

Most of us think that we have some understanding of the nature of the rainbow in the clouds. We know that it has something to do with vast numbers of tiny drops of water in the air and the interaction of sunlight with those suspended drops. We may even know about the refraction and dispersion of light that takes place in those droplets – somewhat like the transformation of sunlight as it passes through a prism.



SOME OPTICAL CHARACTERISTICS OF THE RAINBOW

But there are some things about the rainbow that very few really know – things that deepen our understanding of why God chose the rainbow as the sign of the first bris – the covenant between God and Humanity. The rainbow is fundamentally different from other objects in our environment. Unlike a rock or cloud, mountain or sea, human being, star or bolt of lightning, we can't go around a rainbow. We can't even see it from the edge. Whatever part of a rainbow we see will always form part of a circle. The circle that the arc is a part of will always have a center that is on a straight line through the eye of the beholder to the sun.

The result is that each person who sees a rainbow sees a rainbow that is just for them. Someone standing right next to us will actually be seeing a different rainbow. But the rainbow is a "simon ra" – a bad sign. It is a sign that the world is in a state of corruption – corruption so profound that, were it not for the covenant sealed with rainbow, it would be worthy of destruction like the "Dor HaMabul", the Generation of the Flood.

The rainbow, though, is also our special, unique and individual sign. It is there to tell us that the world is in the state that it's in because of us – because of our individual actions or inactions. The rainbow tells us that it is our individual obligation – and that it is within our individual power -- to change the world for good. As it is our own sign, centered on us, so the change we must bring about in the world must be centered on us. We must first change ourselves – in all of our colors and dimensions – to bring about the correction and perfection of the world.

It is not only human beings, though, that look upon the rainbow. We read:

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[37] **Gen 9:13**

[38] **The first part of this was conceived after seeing a rainbow for the first time in my life-- looking east in the afternoon from the windows of the technology library of the Jerusalem College of Technology in Jerusalem –in '98-99. [#42, p9. See also #71, p154, notebook version of this sefer.] This would almost certainly have been the trailing edge of a storm – the place that usually has the best conditions -- in terms of raindrop size -- for producing a rainbow. [see footnote B 5, next p.] The 2nd part (#122), starting with "It is not only human…" was conceived more than ten years later – in parshas Noach, 5770 ('09) & told over the 1st time to R. Yehudah Tunkel, while we drove from NYC to Toronto for the Chasseneh of a young man who often read the Torah at the Young Israel of Mosholu Parkway.**

וְהָיָה, בְּעַנְנִי עָנָן עַל-הָאָרֶץ, וְנִרְאֲתָה הַקֶּשֶׁת בֶּעָנָן. וְזָכַרְתִּי אֶת-בְּרִיתִי, אֲשֶׁר בֵּינִי וּבֵינֵיכֶם, וּבֵין כָּל-נֶפֶשׁ חַיָּה, בְּכָל-בָּשָׂר; וְלֹא-יִהְיֶה עוֹד הַמַּיִם לְמַבּוּל, לְשַׁחֵת כָּל-בָּשָׂר. וְהָיְתָה הַקֶּשֶׁת, בֶּעָנָן; וּרְאִיתִיהָ, לִזְכֹּר בְּרִית עוֹלָם, בֵּין אֱלֹהִים, וּבֵין כָּל-נֶפֶשׁ חַיָּה בְּכָל-בָּשָׂר אֲשֶׁר עַל-הָאָרֶץ.

And it shall come to pass, when I bring clouds over the earth, **and the bow is seen in the cloud**, that I will remember My covenant, which is between Me and you and every living creature of all flesh; and the waters shall no more be-come a flood to destroy all flesh. And the bow shall be in the cloud **and I will look upon it**, that I may remember the everlasting covenant between God and every living creature of all flesh that is upon the earth.
[**EMPHASIS ADDED, GEN 9:14-16]**

So, at the same time that human beings and other creatures on earth are looking at the rainbow in the clouds, God is looking also. God can see anything from anywhere. God doesn't have to look or see to remember. The use of these human centered visual words would ordinarily be superfluous. This suggests that they are there to tell us something special: that God looks upon the rainbow from the perspective of people and animals on earth. It's a metaphor for God seeing the world through our eyes. So, when we see a rainbow, there are really two who behold it—God and us. Though we have an individual responsibility for the state of the world – and for changing it – we should understand that God can – and does -- see the world through our eyes. It's a perspective that supports the attribute of Mercy in God. It's a perspective that gives us –in the image of God – a full partner in the necessary correction of ourselves and the world.

II But some will say when they see these words -- or hear them told: "Is it really so? Is it true that each person actually sees their own rainbow? How could it be? So we say, תא שמע -- Ta Shema [A] --"Come and hear – come and understand." Here is the gateway to physics. Here we begin to learn about droplets of water in the air; about surface tension and viscosity; about gravity [B]. Here we begin to learn about the interaction of light and matter and about perception. Here we follow the chain of questions until we get to big ones, like "Why is the gravitational constant what it is – and not some other number? Why do the proton and electron have rest masses with the ratio of ~1836:1? Why are there any constants at all? These are the questions that lead us back to the edge of unknowing – to the humility before God that comes from contemplating the ultimate nature of the world.

A. Aramaic - from the Talmud.

B.1 [In 10/'15], two physicists told me that the acceleration of gravity is irrelevant here as one drop effectively replaces another as they fall. However, for a drop of a given radius, the faster the drop falls, the greater the force from the air on its surface & the greater the distortion of its shape from the surface tension induced spherical form needed for a circular rainbow. Also, if the gravitational force were greater, the density of the existing air would increase. This would both reduce the falling speed & increase drop deformation at a given speed[1].

B.2 Further, if the small spherical drops didn't fall slowly [~2m/sec], rainbows would quickly disappear after the rain. At this rate, toward the end of an ordinary rain – with avg. drops falling vertically from a cumulonimbus cloud between 2 & 5 km, the drops would still be falling 16 - 40 min. after the cloud is no longer overhead. A full rainbow at a typical ~1km distance from the viewer would continue to be seen under these fairly normal conditions for ~10-30 min.[2]

B.3 If the drops are too small [r≤0.1mm], lightwave interference effects dominate & unless the drops are of uniform size, colors merge to white.[3] White clouds have droplets of r~.005-.01mm.[4] The optimal drop for producing clear rainbows under existing conditions has r~ 0.4mm.[5] Most raindrops are of r>0.5mm, are non-spherical & oscillate when falling in air - smearing the colors.[6] The combination of optimal size & least number of larger drops is most often found in the trailing edge of rain storms.[7]

B.4 Gravitational attraction & escape velocity at the surface of a sphere vary directly as the density of the sphere & inversely as the square of the radius. So, if a sphere of given density doubles in radius, the gravitational attraction & escape velocity at its surface also double. Thus, a very low density system – like our visible universe- can, if it's large enough, have an escape velocity near its surface that's close to the speed of light- & be a 'Black Hole'- while normal life continues in a galaxy cluster near its center!

1 "Single-drop fragmentation determines size distribution of raindrops" E. Villermaux & B. Bossa, p 697-702, Nature Physics, v. 5, 9/'09; 2. Exceptionally – where the edge of a storm line remains within a few kilometers of a sunlit viewer for some hours, a persistent rainbow may be seen as long as the sun is relatively low in the sky. On 3/14/'94 a rainbow was seen for ~6hrs in Sheffield England. 3. If the droplets are close to the same size, supernumerary, interference based rainbows will appear. See Fig. 6 in ref. 5, below], 4.1 *"A Study of Raindrop-size, Distributions and their Variation with Height"*, pdf p 22, Kenneth R. Hardy, 12/1962 ; 4.2 "Cloud Droplet Size Distributions in Low-Level Stratiform Clouds", N. L. Miles, et al, J of the Atmospheric Sci., p 295-311, V. 57, 1/15/2000 _____ 5 "Physically-Based Simulation of Rainbows", I. Sadeghi, et al, ACM Transactions on Graphics, V. 31, # 1, 12/'11._____ 6 "Raindrop shape determined by computing steady axisymmetric solutions for Navier-Stokes equations", J. Q. Feng & K. V. Beard, 2010 _____ 7 "Studies of Raindrops and Raindrop Phenomena", Table 2, p Wilson A. Bentley. Oct. 1, 1904, p. 450-456, Monthly Weather Review. _____

See also, in this sefer: ***a.*** **COUNT THE STARS**… II Gateway to Math. & Astron. ***b.*** **FROM THE COPPER SNAKE TO THE TREE OF LIFE** II Gateway To…Surface Physics ***c.*** **THE TWO VERSIONS OF SHABBES & THE MARRIAGE OF TWO WORLDS** ***d.*** **FROM THE MOUNTAINS OF ARARAT TO THE TOP OF PISGAH** ***e.*** On the perception of color, see: ***f.*** **SEEING WHAT SEEMS MISSING,** & ***g.*** **THE COLOR OF KINDESS**

THE MIGDOL BAVEL OR 'TOWER OF BABYLON'

The 70 Languages

& A POSSIBLE "HIDDEN MITZVAH"

TO CREATE A "CENSORSHIP RESISTANT" INFORMATION ENVIRONMENT.[39] II GATEWAY TO LANGUAGES, COMMUNICATION SYSTEMS & "FREEDOM OF SPEECH"

When I first conceived of a "censorship resistant" information system – in the mid 70's – I had very little sense of TORAH[40]. I imagined that the device I invented that might be a key to such a system – the Personal Reader[41] – would be worthwhile because it would facilitate communication between people. It would help good ideas find the people who would benefit from them – whether few or many, rich or poor – and whether the political powers liked the idea or tried to suppress it.

The idea of creating such a censorship resistant information system was particularly important to me. I saw it as a strong defense against the rise of dictators and the kind of tragedies the world, and the Jews in particular, have experienced in their wake.

But a censorship resistant system would not only help disseminate worthwhile ideas. A lot of nonsense could be expected to multiply as well. Would developing such a system still be supportive of TORAH? I was increasingly concerned about this issue in the months prior to writing to Rabbis Shapira and Levi and thought of a possible answer Chol HaMoed Pesach -- the season of our liberation -- 5751 (4/91)– shortly before writing the letter cited below.

NIMROD, MITZRAIM's nephew and prototypical dictator, used the major communications media of the time -- "…uniform language and common words—

שָׂפָה אֶחָת, וּדְבָרִים, אֲחָדִים"[42]

to manipulate fearful, centerless, Godless people into building a tower-centered city. The tower would not only be the physical and emotional center of their lives, but it would enable NIMROD to manipulate the people even more. From the tower -

"…with its top it Heaven." וְרֹאשׁוֹ בַּשָּׁמַיִם Bir. 11:4

-NIMROD could better claim to be their God, while being more able to spy on the people below[43]. The

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[39] This is adapted from the first chidush that I wrote down for others to read. It was sent as the first part of a letter to Rabbi Reuven Shapira of Bne Brak & Rabbi [Prof.] Yehuda (Leo) Levi [PhD], founder of the Applied Physics & Electro-optics Dept. & Rector [1982-90] of the Jerusalem College of Technolgy, Yerushalayim, 1 Iyar, 5751, 4/15/91 [See #4, p11, notebook version of this sefer.]

[40] A. In the original letter, some of the key words were written in capital letters for the benefit of Rabbi Shapira who, at that time, was only able to sound out English words that were written in Capital letters. I have preserved those capitalizations in this version.

B. On Shabbes Mishpotim, 5779, in Yerushalyim, after a conversation with Yoseph Bentley – a young student in Derech Yeshiva- about censorship resistant information technology, I realized that the most censorship resistant information technology may well be an educational system –like the traditional Yeshiva – that encourages students to recognize apparent contradictions and to ask questions about them. It was the recognition of such apparent contradictions that led me to question the story of the Taliban in the post 9/11/01 climate and ultimately to write a sefer – "Torah and the Taliban" – that showed that almost every bad thing that was said about them was false.

In an environment saturated with communications tech. & info. sources, almost nobody else even noticed the contradictions & therefore almost nobody else asked the questions that led me to discover the truth. It was also imp'tant that my basic education included being inculcated with concern for others & the sense of the unity of human kind –both also parts of a traditional Torah/yeshiva education.

Yosef Bentley had told me, as we were walking to the home of Rabbi Salasnik for our Shabbes day seuda, that he had very carefully studied my poster "INNOVATION FOR GLOBAL PEACE" that I had put up on an internal bulletin board of Ohr Someyach Yeshiva. The poster had been prepared for and distributed to some participants of event Co-chaired by People's Republic of China Vice President, Wang Qishan: The meeting of the China-Israel Joint Committee on Innovation Cooperation with Israeli P. M. Netanyahu in Israel.[10/24-25/'18].[see footnote 388 "A true teacher of Torah encourages his students to ask questions and is not afraid of apparent contradictions." Special teachings of the Chofetz Chaim that I learned directly from his last personal secretary, R. Yitschok Poupko.

[41] The Personal Reader™ is a small, low-cost, face-mounted, bi-ocular microscope for sustained reading of 'full page' microminiature opto-electronic displays & microfiche. For microfiche -which does not involve on-Shabbes updating- it may be used on Shabbes by Orthodox Jews. As of 5781 (8/8/'21), it's expected to be ~50 gms, incl. batteries & fit neatly into a shirt pocket. Leading inventors, foundations, companies & US Government Agencies [A] attempted to create such a device -for microfiche- for more than half a century before my invention.

There are at least two keys to making it compact, lightweight & low cost: 1. Device design economies dovetailing with natural economies of human vision. [This was the dimension of the problem I saw more clearly than prior inventors.] & 2. Knowing what 'full page' means. Here it means the angular size of the main text area of the largest standard single column book page viewed looking forward – decoupled from the need to hold a book in the hands. This yields a 28° virtual image diagonal. [based on: "Working distance and eye and head movement during near work in myopes and non-myopes" Andreas Hartwig, et.al., Clinical and Experimental Optom 94.6 11/'11 536–44: 30 subjects read printed text from both hand held & vertical screen-mounted paper documents.] The usual understanding for "full page" reading led to a 35° diag. & 70gms. [Based on "Some normative data on reading distance" [D H. Schuster, et al.,Perceptual & Motor Skills,'69, 28, 202 IV-1, 78 subjects read a hand held paper document.]

For more on the Personal Reader™, see footnote, 547 infra, & author's s'forim אוֹת הִוא לְעֹלָם **A SIGN FOREVER** [incl. p 133-9] & וּבלכתך בדרך **AS THOU GOEST BY THE WAY.**

A. e.g.. R. Adm. Bradley Fiske [1920's, 'Stretching the Five-Foot Shelf: An Invention That May Reduce the Size of Our Books to a Fraction of Their Present Bulk', S. R. Winters, Scientific American, 6/1922]; U.S. National Research Council [1930's: Ralph D. Bennett 'Sheet Microfilm, Advantages, Techniques Costs, Report to the Committee on Scientific Aids to Learning of the NRC, 1939]; Verneur E. Pratt & George F. Gray [1940's, Mirofilm Reading Spectacles , US Patent US 2485411, filed 1945, issued 1949]; Council on Library Resources,[1950's-1960's, 'In quest of an optical "grail": The search for an inexpensive hand-reader for microtext, V. W. Clapp, ALA Bulletin, 2/'61], Edwin Land [1960's, Personal Conversation, mid '83. For more on this conversation , see chapter: "The bottom line is in Heaven." in the author's sefer "A Sign Forever]; Encyclopdia Britannica/ Library Resources Incorporated [microbook publishing program, 1970's]; US Military/Navy Personalized Portable Micromedia Display System Development Program [1970's, "An evalutation of microfiche reader types for use with programmed instruction" F. L. Keeler & W.A.Rizzo , Aug 1976, PPMDS noted on p.6]

[42] Br. 11:1."And the whole earth was of one language and of one speech."

[43] It is interesting that Rabbi Shapira's great-great –grandfather, R. Naphtali Tzvi Yehuda Berlin – the Netziv--(1816-93) wrote in *Ha'amek Davar*, on Gen. 11:1,3 that [t]he Bible's seeming omission of the sin that provoked God's wrath, and its concurrent emphasis on the unity of Babel's society, …[leads to the conclusion] that the initial sin of the people of Babel lay in the very fact "that they were one." He states that they sinned further, though, by appointing guards to enforce the uniformity of thought and by making the espousal of divergent ideas punishable by death." *From p 76 of "No Two Minds are Alike":Tolerance and Plu-*

derech – the way -- of this monolithic, avoda-zara – idolatry -- centered society was given as the example for all future societies to avoid. And the way to avoid it was also given: converting a single foolish idea into "seventy" foolish ideas…

"…and they left off building the city.וַיַּחְדְּלוּ לִבְנֹת הָעִיר..."
[Br 11:8]

opening the way to… תּוֹלְדֹת שֵׁם "…the generations of Shem…"[Bir.11:10]…the generations of those that seek The Name – that seek to know the ways of HaShem [44].

Avroham and Nimrod were contemporaries. Even while Nimrod was inspiring the people to build the tower, Avroham Avinu was trying to teach the same people the Derech HaShem – the ways of God. Instead of winning over converts, he became a key target of Nimrod's persecution. The people were dehumanized. The image of God in them was being eroded. If a person fell off the scaffolding while they were building the tower, the others wouldn't even turn around. If a brick fell, they'd cry.[45]

Only when the uniform language was broken into seventy languages[46] and the people building the tower could no longer communicate with each other effectively, did they begin to listen to Avroham[47]. The ways of God are given in 70 languages – with 70 perspectives. Teaching the ways of God thrives in an environment of 70 languages.[48] Foolishnes – that comes to dehumanize us – is defeated when its multiple forms reduce it to background noise. This suggests that maintaining '70 languages' as an intrinsic feature of the social landscape[49] -- if necessary through "censorship resistant" information technology[50] -- is directly supportive of the Derech HaShem.[51]

More than 20 years later, I saw a related idea in a verse in V'eschanon: [Dt. 4:19]

וּפֶן־תִּשָּׂא עֵינֶיךָ הַשָּׁמַיְמָה וְרָאִיתָ אֶת־הַשֶּׁמֶשׁ וְאֶת־הַיָּרֵחַ
וְאֶת־הַכּוֹכָבִים כֹּל צְבָא הַשָּׁמַיִם וְנִדַּחְתָּ וְהִשְׁתַּחֲוִיתָ לָהֶם וַעֲבַדְתָּם
אֲשֶׁר חָלַק יְהוָה אֱלֹהֶיךָ אֹתָם לְכֹל הָעַמִּים תַּחַת כָּל־הַשָּׁמָיִם:

And beware lest you lift up your eyes to heaven, and when you see the sun and the moon and the stars, all the host of heaven, you be drawn away and worship them and serve them, things which the LORD your God has allotted to all the peoples under the whole heaven.

It appears Hashem is giving non-Jews the worship of the astronomical bodies – a form of idol worship that is prohibited –even to non-Jews! However, the expression that's used isn't based on a word for giving. It's based on חָלַק - whose meaning is centered on *dividing*. So the idea is to take the tendency to run after idols and break it up – like the 70 languages – so that no one great and universal form of idol worship can come to dominate and dehumanize the people— and the Jewish people can lead the people more surely – like Avrohma Avinu – to the Derech HaShem.

[Related to R. Shapira & Family, Shab. V'eschanaon. 15 Av 5781. Jerusalem]

See also, in this sefer: **FILL THE EARTH** II Gateway To Nature-Nurture Questions & **THE COLOR OF KINDNESS** II Gateway To Genetics & The Limits Of Language; **THE QUESTION OF BLOODLETTING**

ralism in the Work of Neziv",Gil S.Perl,The Torah u-Madda J.(12/'04),p74-98 ._____ p. 93 includes the following excerpt from Netziv's essay on anti-Semitism "She'ar Yisrael" at end of volume on Shir Ha-Shirim in *Ha'amek Davar* (Jerus: Yeshivat Volozhin, 1999). שאר ישראל (לנצי"ב) פרק ד

... ועוד עשו להם דברים אחדים ביניהם לשנות צורת האדם, שיהא כל אחד מתהלך בעולמו לפי דעתו, וברוך הוא חכם הרזים שברא את אישי בני האדם נפרדים בדעותיהם! והמה דור הפלגה עשו ביניהם דברים אחדים בדעה אחת, והקימו משמר על זה בבנין המגדל וראשו בשמים, למען יוכלו להשגיח מרחוק על איזה שירצה לצאת מקרבם לבטל אותם הדברים האחדים. וכאשר שנו תכלית הבריאה והצורה האנושית באה ההשגחה ותבלבל את מחשבתם.

https://www.responsa.co.il/default.aspx https://tablet.otzar.org/he/bookbook.php?book=156704&width=0&scroll=0&uid=0&pagenum=283

"And they also established amongst themselves "singular things (*devarim ahadim*)" in order to change the form of man (*zurat haadam*) which is that everyone goes within their world according to their own mind (*kol ehad mithalekh be-olamo lefi da'ato*), and blessed be the Knower of Secrets who created mankind with distinct minds (*nifradim bi-de'oteihem*)! And that Generation of Dispersion established amongst themselves "singular things (*devarim ahadim*)" with uniformity of thought (*be-de'ah ehat*) and set up guards for this purpose in a tower with its top in the heavens so that they would be able to watch from a distance those who wished to leave their midst in order to nullify the "singular things (*devarim ahadim*)." And when they changed the purpose of creation and the form of mankind the Divine Providence came and confused their thoughts." https://www.sefaria.org.il/The_Third_Bet_Hakhasah.43.4?lang=bi&with=all&lang2=en

[44] שֵׁם isn't only the name of one of Noah's sons, it also means 'name'. Hashem isn't only a way we refer to God, it actually means "The Name."

[45] Pirḳê de Rabbi Eliezer,trans...by Gerald Friedlander, 1916, p. 176

[46] Rashi on Deut 27:8 "very plainly", from Sotah 32a.

[47] Avroham, Yoseph in Mizraim [SOTAH 36b], Moshe, Mordechai [MEGILLA 13b], R.Eliezer, R.Joshua, R.Akiba & Simeon the Temanite & other members of the Sanhedrin[SANH 17a,b]were able to speak 70 languages. For those who say *'...it is impossible for one man to know all these languages ...'*[Sonc. Talm. in Engl., note 39 to SANH 17a _____], Cardinal Giuseppe Mezzofanti, 1774- 1849CE, Head of the Vatican Library, knew 38 languages perfectly & was able to speak well in >70. I'm indebted to Yisroel Chaim ben Yechiel Aaron [Imre Berczeller], Z"L, who davened in Young Israel of Mosholu Pkwy, for the ref. to Card. Mezzofanti. _____

[48] Schools are part of the communications system. Monopolistic Public Schools – where schools aren't a natural monopoly – are a major form of censorship. See in this sefer: AND THEIR CRY CAME UP TO GOD -- particularly see footnote 239

[49] An intrinsic feature of the social landscape is more robust than a law --which can be broken or abolished. The questions of people attuned to noticing apparent contadictions & who are both accustomed to – & brave enough --to ask questions about such contradictions, may be the most intrinsically censorship resistant technology of all: Jews- in the spirit of אברהם אבינו -- Avroham Avinu, dispersed throuout the world.

[50] The printing press functioned as such a technology even in its first decades. It enabled tens of thousands of sforim to be sent out of Spain before the Jews were expelled and their sforim confiscated. On Soncino's first printing of a Hebrew book , Tractate Brochos of the Talmud -- in 5244 [1483], the invention of the printing press was cited as a fulfillment of the words of Isaiah 11:9:

לֹא-יָרֵעוּ וְלֹא-יַשְׁחִיתוּ, בְּכָל-הַר קָדְשִׁי: כִּי-מָלְאָה הָאָרֶץ, דֵּעָה אֶת-יְהוָה, כַּמַּיִם, לַיָּם מְכַסִּים.
"…for the earth shall be full of the knowledge of the LORD, as the waters cover the sea."

[51] The "Occupy Wall Street" camp in NYC's Zuccotti Park was a demon-stration of the possibilities of '70 languages'. Here, in 5772, where there was a such a diversity of people -- with very different ideas about what needed to be done to make a better world -- the author found a receptive audience, speaking >30hrs on 7 days -- about The Taliban & Jitneys, etc. [see, in this sefer: **"JUSTICE, JUSTICE..." PUBLIC TRANSPORTATION AND THE TALIBAN**], Life in Bne Brak, Competitive Schools and the importance of ' 70 languages' to make it all happen.]

COUNT THE STARS – SO SHALL YOUR CHILDREN BE[52]

II GATEWAY TO MATHEMATICS AND ASTRONOMY

When Avroham Avinu had been living in the Promised Land for ten years and had become the Priest of God. When he still had no children of his own – other than his many students – and wondered what kind of great reward God had for him, we read:

וַיּוֹצֵא אֹתוֹ הַחוּצָה, וַיֹּאמֶר הַבֶּט-נָא הַשָּׁמַיְמָה וּסְפֹר הַכּוֹכָבִים--אִם-תּוּכַל, לִסְפֹּר אֹתָם; וַיֹּאמֶר לוֹ, כֹּה יִהְיֶה זַרְעֶךָ.

And He brought him forth outside, and said: 'Look now toward heaven, and count the stars, if thou be able to count them'; and He said unto him: 'So shall thy seed be.' **BIREISHIS 15:5**

If we actually go outside today in the middle of a dark and moonless night and let our eyes get dark adapted – out in the desert – on a mountaintop – far away from any visible source of light other than the stars themselves – how many stars can we actually count? It turns out that it's not that many – perhaps ten to twenty thousand from any given spot on Earth – maybe fifty thousand for all places on Earth combined[53]. But there were already over 600,000 men 20 or more years old when the Jews came out of Mitzraim [54] – more than two million people including woman and children – and this did not include the children of Yishmoel – or Esau.

After the parsha of the Akedus Yitschok – the binding of Isaac, God says:

כִּי-בָרֵךְ אֲבָרֶכְךָ, וְהַרְבָּה אַרְבֶּה אֶת-זַרְעֲךָ כְּכוֹכְבֵי הַשָּׁמַיִם, וְכַחוֹל אֲשֶׁר עַל-שְׂפַת הַיָּם; וְיִרַשׁ זַרְעֲךָ, אֵת שַׁעַר אֹיְבָיו.

that in blessing I will bless thee, and in multiplying I will multiply thy seed as the stars of the heaven, and as the sand which is upon the seashore; and thy seed shall possess the gate of his enemies; BIRESHIS 22:17

It is possible to count – or at least to estimate – the number of grains of sand by the sea shore[55]. It should be obvious - to anyone who has ever seen a beach and also stared up at the night sky - that the number of grains of sand on just one stretch of beach is thousands of times greater than the number of visible stars.

So why mention stars at all – if the idea of them – of counting them -- is just their number? The Midrash Rabbah Genesis 44:12– cited by Rashi – resolves this problem by saying that when we read at Bireishis 15:5 "And He brought him forth outside…", it doesn't mean just outside of his tent. It means outside of the ordinary world – to the world of Eternity – where Avroham Avinu could see forever. There he could see trillions of individual stars.[56] But he could presumably also see trillions of grains of sand – not only those that exist today, but all of the grains of sand by all

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[52] See #5, p14 in notebook version of this sefer. See also Dev 1:10-11, 10:22 & 28:62 "כְּכוֹכְבֵי הַשָּׁמַיִם לָרֹב…as the stars of heaven for multitude…". The word- רֹב – 'multitutde' can also mean 'greatness', as in: 2 Sam 22:36. וַתִּתֶּן-לִי, מָגֵן יִשְׁעֶךָ; וַעֲנָתְךָ, תַּרְבֵּנִי. "Thou hast also given me the shield of thy salvation: and thy gentleness hath made me great."

[53] It's usually said that under excellent viewing conditions the unaided eye can see stars with a magnitude 6.5. For stars of brightness ≥6.5, there are only ~8.8k stars visible from the whole earth. Under truly exceptional viewing conditions & dark adaption, some have "a naked-eye limit close to mag. 8.0. _____ Then, the total is ~50k_____ See also: "On Seeing Stars (especially up chimneys)," D. Hughes, Q. J. of the Royal Astron. Soc., V.. 24, #3, 1983, p 246-57. _____ Of course, under good stargazing conditions we can also see what looks like a pale milky streak across the sky – the Milky Way – the galaxy in which our solar system resides – but we can't make out its individual hundreds of billions of stars – other than those 50k – without a telescope -- & -- there are ≥100 billion galaxies. see TABLE OF SIZES, p. 45

[54] Exod 12:37, Ex 38:26

[55] See also in this sefer TO MOVE THE EARTH, incl. ref to "The Sand Reckoner".

[56] י״ב מזלות בראתי ברקיע ועל כל מזל ומזל בראתי לו שלשים חיל ועל כל חיל וחיל בראתי לו שלשים לגיון ועל כל לגיון ולגיון בראתי לו שלשים רהטון ועל כל רהטון ורהטון בראתי לו שלשים קרטון ועל כל קרטון וקרטון בראתי לו שלשים גסטרא ועל כל גסטרא וגסטרא תליתי בו שלש מאות וששים וחמשה אלפי רבוא כוכבים כנגד ימות החמה TAL. BAVLI, BERAKHOT, 32:b,

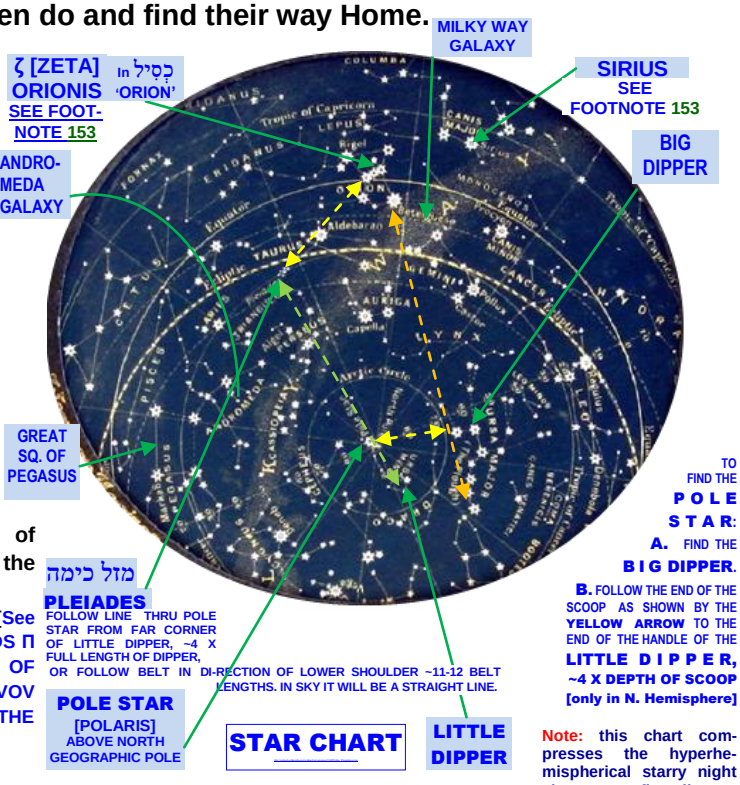
1 quintillion, 10^{18} ~= "12 constellations have I created in the firmament, & for each constellation I have created 30 hosts, & for each host I have created 30 legions, & for each legion I have created 30 cohorts, & for each cohort I have created 30 maniples, & for each maniple I have created 30 camps, & to each camp I have attached 365,000 of myriads [10,000] of stars, corresponding to the days of the solar year" [Schot. ed. 1st ed. 1st imp '97CE, p32b[3] has 'quadrillions".]

of the seas that ever existed or will ever exist[57]. Why do we need to refer to the stars at all if the number of grains of sand will give us the great number we're looking for – and then some?

The key to understanding the reference to the stars is appreciating what the stars are about – how they actually appear to those of us in the ordinary world who gaze up at the starry heavens. It's not their number that's so impressive. It's not their brightness – against the deep blue-blackness of the midnight sky. It is their order. The fixed stars maintain an extremely precise, seemingly unchanging order with respect to each other and with respect to the axis of rotation of the Heavens as seen from the Earth[58-A]. The result is that if we know this pattern – including which star is the pole star and how to find it amid the multitude of stars we see – we can find our directions. Even where there are no landmarks – at sea or in a trackless desert of sand or snow -- we can get our bearings from the stars and find our way home.

So now we can understand better what God was saying to Avroham Avinu. Your children should be like the stars in their own special form of greatness – in their exact order – their exact seder – with respect to the Derech HaShem – the Way of God. All of the people of the world should be able to look at the behavior of your children in every generation and set their sights by them. They should be able to see the Derech HaShem so clearly in the way your descendents comport themselves that they will be able to know which way to go.[58-B] Even in a desert of ruchnius – where there is almost no sense of anything other than the material world – people will see what Avroham's Children do and find their way Home.

But why are there so many more Jewish people than there are visible stars? In every generation there will always be enough of us with such an exact order in the Derech HaShem that the rest of the Jews and the people of the whole world will be able to find their Way. The rest of us will also have a star-like order – but for a much more limited time and place. In that time – if only for a brief moment, a *twinkle* –we will be seen as the guides for those around us[58-C] To appreciate what kind of order the stars have, how we can find our way by them and what kind of seder we should have in the Derech HaShem, we go "outside" & "count the stars if we are able to count them".



II"Count the Stars" can be a sefer. It can be a gateway to the study of mathematics, astronomy and the methods of precise measurement that are so essential for understanding the meaning of what we read in Torah – and the seder of the world.

SEE ALSO IN THIS SEFER: THE MABUL & A COMET/EARTH IMPACT-[See footnote 732-B] ; THE KESHES B'ANON – THE RAINBOW IN THE CLOUDS Π GATEWAY TO PHYSICS & THE EDGE OF UNKNOWING; THE TWO VERSIONS OF SHABBES AND THE MARRIAGE OF TWO WORLDS; THE LOMED-VOV TSADIKIM -- THE 36 HIDDEN RIGHTEOUS PEOPLE UPON WHOM THE WORLD STANDS; TABLE OF SIZES [FIX ARROWS!]

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[57] Much of the sand in sandstone & shale was once sand by the sea shore. With ~5 grains/mm³ of sand, there would be 5 billion-billion grains/cubic km & > 1,000,000 X that for the whole earth.

[58A] It is interesting that the only place the word seder – order -occurs in TENACH is at Job 10:21-2: "Before I go whence I shall not return, even to the land of darkness and of the shadow of death; A land of thick darkness, as darkness itself; a land of the shadow of death, without any order, and where the light is as darkness. וְאֶרֶץ עֲפָתָה, כְּמוֹ אֹפֶל--צַלְמָוֶת, וְלֹא סְדָרִים; וַתִּפַּע כְּמוֹ-אֹפֶל." ..." Since there is a word in English "Sidereal" pertaining to the fixed stars, maybe all of these words are related. Not found in "An Index to Aquila" Joseph Reider and Nigel Turner, Brill, 1966, Vol 12, Supplements to Vetus TEstamentum. The usual word for 'order' in TENACH is עֶרֶךְ related to the ideas of arrange or array.

[58-B] "וְהַמַּשְׂכִּלִים--יַזְהִרוּ כְּזֹהַר הָרָקִיעַ וּמַצְדִּיקֵי הָרַבִּים כַּכּוֹכָבִים לְעוֹלָם וָעֶד. ...they that turn the many to righteousness [shall shine] as the stars for ever ..."[DAN. 12:3] Quoted by Vilna Gaon [1720-97] perush on story of Rabbah bar bar Hannah [2nd gen. Babyl. Amora, grandson of Ḥana, brother of Ḥiyya [see footnote 614 B] where "a wave lifted us up so high that we saw the resting place of the smallest star"[*Bav.Basr.*73] & astronomer R. Abraham Zakuto (1452-1520CE) in intro. to his Sefer Yuchasin.

[58-C] – But why also "like the sand which is on the sea shore"? When we're 1st united in the Derech Hashem – it follows, as in the possuk, we can hold back the sea- like the sand by the sea shore.

GEMILUS CHASADIM …"CAMEL KINDNESS"[59]

II GATEWAY TO LIFE SCIENCES AND SUSTAINABLE LIVING

The third line of Aishis Chail [60] – that we sing Shabbes Night before Kiddush[61] -- begins with the third letter, gimel.

גְּמָלַתְהוּ טוֹב וְלֹא-רָע-- כֹּל, יְמֵי חַיֶּיהָ

She does him good and not evil all the days of her life. [**PROVERBS 31:12**]

The translation "She does him good.. " is fairly typical. But why should a word that looks like it starts with the Hebrew word for camel be translated this way? In the Shmoneh Esrei we find a similar situation. In the very first brocha we read גּוֹמֵל חֲסָדִים טוֹבִים "…go-meil cha-sa-dim to-vim.." It is translated typically as "who bestows bountiful kindness." But "go-meil" is again spelled the same as the Hebrew word for camel. Why should it be translated as "bestows" ?

There are actually several other words that, surprisingly, appear to have the same three letter root as camel. When Yitschok is weaned, we have:

וַיִּגְדַּל הַיֶּלֶד, וַיִּגָּמַל; וַיַּעַשׂ אַבְרָהָם מִשְׁתֶּה גָּדוֹל, בְּיוֹם הִגָּמֵל אֶת-יִצְחָק.

And the child grew, and was weaned. And Abraham made a great feast on the day that Isaac was weaned.

BIRESHIS 21:8

The root of the word for "weaned" is the same as for camel. When we learn about the transformation of Aaron's staff, we read

וַיֹּצֵא פֶּרַח וַיָּצֵץ צִיץ, וַיִּגְמֹל שְׁקֵדִים.

"and put forth buds, and bloomed blossoms, and bore ripe almonds." **BAMIDBAR 17:23**

the word that is translated here with the expression "and bore ripe" also has the same root as camel.

What is the possible connection, if any, between a ripening fruit, weaning a child, God's kindness, what an exceptionally valorous woman does for her husband – and a camel?[62] I thought that if I understood more of what camels are about, I could come up

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[59] See #14, p 28, notebook version of this sefer

[60] It is interesting that the only woman in all of Tenach that is described explicitly as an 'Aishes Chail' is Ruth [Ruth 3:11].

[61] This is the first chidush that I ever thought of – shortly after moving into the Chabad House of Kenmore Sq. Bost. It was just before Rosh HaShana, 5745 (9/86). On the first night I kept Shabbes because I wanted to -- after which I've kept Shabbes without a break – I met a very attractive woman who was like no one I'd ever met before. She was ~my age & lit Shabbes candles with a blessing in Hebrew. I quickly learned that she had a PhD from Harvard & an MA from another distinguished university in a completely different field -- one literary, the other quantitative. After the group sang Aishis Chail – I was only able to follow along in English -- I told her I thought it was a beautiful song. She thought it was very nice but didn't apply to modern women. Without knowing much of anything, I decided to try to understand as much as could about this song –& to explain it to her at our next meeting. When I saw that the translation of a word beginning with the Hebrew for camel was just "does", I looked into it more deeply & came up with this chidush.

[62] I used the Brown Driver Briggs Gesenius Lexicon. It doesn't show as standard the relationship between camel & the other meanings that I show here. Strong's Hebrew Dictionary has camel derived from the other meanings. R. Samson Raphael Hirsch [1808-'88] relates these words—at Gen 21:8 & 24:17-20.

with an answer. I found a book on the camel family in the library of Harvard's Museum of Comparative Zoology.

It turns out that camels are really remarkable animals. Their survival in the desert depends, as we might expect, on their extreme ability to conserve water. They don't even begin to sweat until their brain temperature reaches 106°F. Even then, they perspire under four inches of wool on their backs -- preventing the sun and desert wind from carrying off the water before it can contribute as much as possible to keeping them cool.

However, what is most relevant to how camels relate to an Aishis Chail – and to other key Torah concepts – is how they drink. When a camel comes to water, it drinks so much at one time that it can dilute its blood to a point that would kill most other mammals. A half ton camel can drink 200 lb – 20% of its body weight. Once it's full, it can not only survive in the desert for long periods on no food or water at all[63], it can also sustain others.

This is the connecting idea. When something is filled to its latent capacity and can survive adversity on its own, it has the camel principle. When the fruit is ripe, it has been filled to its potential as a fruit. Its seeds are ready to perpetuate the tree that it came from. When the baby is weaned, it is filled to a point that it can begin to live independent of its mother's breasts and ultimately perpetuate the human race. The Good that the Aishis Chail does for her husband, like the Kindness of God, enables him to go out into the world and do Good and acts of Kindness for others.

When we read in Perkei Avos 1:2, that the world stands on three things -

על התורה, ועל העבודה, ועל גמילות החסדים

On Torah, on the service of G-d, and on deeds of kindness.[63-B] -

it is not just "deeds" of kindness – though this is the usual translation. It is a very special kind of kindness. It's like the kindness that Abraham and Sarah showed to their guests before they headed for S'dom and Gomorra[64]. It is the kindness that their daughter-in-law-to-be, Rivkah, showed to Eliezer of Damascus[65]. It is the kind of kindness that enables the recipients to go into what is so often a midbar – a desert – of ruchnius – of spirituality – and not only sustain themselves but sustain others and perpetuate such full and self perpetuating acts of kindness in the world.

II IT IS A GATEWAY TO LEARN LIFE SCIENCES AND SUSTAINABLE LIVING, ECOLOGY, GEOGRAPHY – Why do we need water & food at all? How does the camel survive with so little? How do plants grow? Maybe a gateway to the origin of writing – where did the ג (gimel) get its name?

[63-A] This enables camels to go for over a week without food or water [see footnote 901]– to go routinely from one oasis to another. The white oryx is ~3X as efficient as the camel in the use of water. It can go months without drinking & gets virtually all its water from plants like *Panicum turgidum*, the extremely drought reisistant desert vegetation that it eats. "Water Influx and Food Consumption of Free-Living Oryxes (*Oryx Leucoryx*) In The Arabian Desert In Summer" Stéphane Ostrowski, J. B. Williams, E. Bedin, K. Ismail, *J. of Mammalogy,* V.83,#3:665–73,'02 [See footnote, page 45 TABLE OF SIZES & footnote 781– for more on the Oryx in Torah – and pictures.]

[63-B] "*Shimon the Righteous was among the last surviving members of the Great Assembly He would say: The world stands on three things: Torah, the service of G-d, and deeds of kindness.*" See also in this sefer THE FOUNDATIONS OF THE WORLD.

[64] Bireishis, Chapter 18

[65] Bireishis 24:10-22, particularly 24:14 "So let it come to pass, that the damsel to whom I shall say: Let down thy pitcher, I pray thee, that I may drink; and she shall say: Drink, and I will give thy camels drink also; let the same be she that Thou hast appointed for Thy servant, even for Isaac; and thereby shall I know that Thou hast shown kindness unto my master.'" Filling 10 empty camels would take a ton of H_2O.

AKEDUS YITSCHOK: AS I WILL TELL YOU[66]

The parsha of עקידת יצחק -- Akedus Yitschok -- the Binding of Isaac -- is one of the most difficult and seemingly contradictory episodes in the Torah. Avroham Avinu is apparently told by God to sacrifice his son -- the same son, Yitschok, through whom we had just learned Avroham's God-centered legacy is to pass [67A] -- the same son who is to bring blessing to all of the Families of the Earth [67B] -- and Avroham doesn't appear to question or object to what he's told. The same Avroham who, in the same parsha [67C] repeatedly challenged the justice of God's intention to destroy S'dom -- to destroy the righteous with the wicked [67D] -- says nothing here to protect his own righteous son. Instead, he gets up "early in the morning", ready and willing -- with fire and knife -- to do whatever God asks.

There are three keys to resolving these apparent contradictions[67E]. The first is to see that Avroham does ask questions about the Akeida– and then stops. The Midrash says that when God says to Avroham:

'...קַח-נָא אֶת-בִּנְךָ אֶת-יְחִידְךָ אֲשֶׁר-אָהַבְתָּ...'

'...*take now your son, your only son, whom you love*...' [67F]

Avroham asks and is answered three times -- as God is talking: **Q.***Which son?* ***A****. Your only Son.* ***Q****. Which only son?* ***A****. The son that you Love.* ***Q****. Which son that I love?* ***A***. Yitschok [67G]. Immediately after this answer came an expression Avroham had heard from God half a century before: '...לְךָ-לְךָ... -...*Get thee*...' This was when he'd been told to go '...*to a land that I will show you*...' [67H]. Just as there God didn't give the details of where he was to go until he arrived, here the details would also come later. So Avroham held off on his questions[67-I].

The second key is to recognize that ambiguity and *double entendre* are inherent in the way language is used here -- as understood by Avroham and Yitschok. For example, in Bir. 22:7-8, we read:

וַיֹּאמֶר יִצְחָק אֶל-אַבְרָהָם אָבִיו, וַיֹּאמֶר אָבִי, וַיֹּאמֶר, הִנֶּנִּי בְנִי; וַיֹּאמֶר, הִנֵּה הָאֵשׁ וְהָעֵצִים, וְאַיֵּה הַשֶּׂה, לְעֹלָה. וַיֹּאמֶר, אַבְרָהָם, אֱלֹהִים יִרְאֶה-לּוֹ הַשֶּׂה לְעֹלָה, בְּנִי; וַיֵּלְכוּ שְׁנֵיהֶם, יַחְדָּו.

"And Isaac spoke unto Abraham his father, and said: 'My father.' And he said: 'Here am I, my son.' And he said: 'Behold the fire and the wood; but where is the lamb for an elevation-offering?' And Abraham said: 'God will provide Himself the lamb for an elevation-offering, my son.' So they went both of them together."

They both understood the potential meaning of: *"the lamb for an elevation offering, my son"* -- though this statement is at least doubly ambiguous.[68]

The third key to this parsha is the meaning of the word אֲשֶׁר - asher- in the initial instructions that Avroham is given. In Bir. 22:2, we read:

וַיֹּאמֶר קַח-נָא אֶת-בִּנְךָ אֶת-יְחִידְךָ אֲשֶׁר-אָהַבְתָּ, אֶת-יִצְחָק, וְלֶךְ-לְךָ, אֶל-אֶרֶץ הַמֹּרִיָּה; וְהַעֲלֵהוּ שָׁם, לְעֹלָה, עַל אַחַד הֶהָרִים, אֲשֶׁר אֹמַר אֵלֶיךָ.

'....and get thee into the land of Moriah; and offer him there for an elevation offering upon one of the mountains which I will tell thee of.'

The translation of אֲשֶׁר -asher- as '*which*' is typical. It suggests that Avroham needs to be told *which* mountain in the land of Moriah is to be used for the place of the altar. But the Midrash says the altar was the same one used by Adam, Cain, Able and Noach[69]. Must we think that Avroham, whose adult life overlapped that of Noach and who learned directly from his son Shem[70], wouldn't know where this altar was – even after living in The Land for more than half a century?

Further, this interpretation appears to require God to tell Avroham which mountain. It says "... 'which' I will tell thee of..."- but nothing more is told to Avroham until Yitschok is already bound on the altar[71].

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[66] Mostly from #66-7 p.12,48,49,52, #35, p.94 notebook vers'n of sefer. Parts, with notes 43E-I, 48A&C & 50-54, added Cheshvan-Kislev, 5774.

[67] A. Br 17:19 '...Isaac: and I will establish my...everlasting covenant with his seed after him.' B. Br. 21:12; C. Vayeira, Br. 18.1-22.24; D. Br 18:23-32.; E See footnote 387 on Chofetz Chaim. F. Br. 22:2; G. Par-a-phrased from Mid.Rab.Br 55:7; H. Br 12:1; I. This may be the 1st גזירה שוה - *gezerah shavah* -where an expression occurs only twice in Chumash & we learn more about one from the other's context. Midr. Rab. has Avr. stop, פרקי דרבי אליעזר has him ask: 'Which mt.?'

[68] A. That לְעֹלָה, usually translated as "for an elevation offering", doesn't have to mean "for a burnt offering", is shown at Bireshis Rabbah 56:8. Here God explains to Abraham that He didn't change His mind. He'd said "take him up"- the literal translation of לְעֹלָה. After the binding, God says "Now take him down". The root idea of this word has to do with "going up" not burning. The association with burning is that the smoke rises.

Thus, לְעֹלָה is a *double entendre*. If God didn't want ambiguity, he would've said ושחטהו *"and slaughter him"*. With בְּנִי - *my son* - which, here, is also ambiguous, לְעֹלָה sets the tone for other ambiguities in the rest of the parsha of the akeida. [also see footnote 78-B for a related *double entendre*.]

B. Lamb is also a *double entendre:* a baby sheep & Yitschok & his spiritually elevated descendants, the Jews. So when we read:

אנדריאנוס קיסר אמר לו לר' יהושע: גדולה היא הכבשה שעומדת בין שבעים זאבים. אמר לו: גדול הוא הרועה שמצילה ושוברן לפניהם. הדא הוא דכתיב: (ישעיה נ"ד Is. 54:17) כל כלי יוצר עליך לא יצלח וגו':

'[Roman] Emp. Hadrian [76,r.117-38 CE] said...great is the lamb that can endure among 70 wolves...'[Esther R.10:11] The greatness of the Lamb is attachment to God -- among those who run after meat- their physical needs - & are not concerned about the blood they shed along the way .

[69] Gen 22:9. Pirkei d' Rabbi Elliezer, cited by Zlotowitz, et al, Bereishis 1st Ed. '78. though the cited Midrash has Hashem pointing out & giving the history of the place at the time of the Akeidah.

[70] מַלְכִּי-צֶדֶק מֶלֶךְ שָׁלֵם Gen 14:18, Nedarim 32b, Gen Rab. 46:7

[71] In Parsha Lech lecha, the concl. is אֲשֶׁר אַרְאֶךָּ 'as I will show you' [Br 12:1]-- not , 'as I will tell you'. If it was just a matter of showing, why do we have tell here? Still, as noted, [see footnote 67-I] Midr. Pirke de-Rabbi Eliezer has Avroham asking: 'Which mountain?' & being told what he will see to distinguish it.

These difficulties may be resolved if we allow אֲשֶׁר 'asher' - to be, like לְעֹלָה earlier in the same possuk, another ambiguity or *double entendre.* It may refer to which mountain [72A], to which place on the mountain [72B], to what is to be elevated [72C] or to the entire preceding set of instructions 'which I will tell you more about later'. [72D]

With this understanding, we can learn something more of the special אמונה emuna – faith - of Avroham and why he didn't argue with God here as he did in the case of the impending overthrow of S'dom and Gomorra. Avroham's faith allowed that however apparently contradictory and ambiguous his assignment, there would be further instructions that would resolve these contradictions and clarify the ambiguities.

Avroham prepared himself for all possible interpretations – though he believed that God would ultimately explain what he was to do in a manner consistent with all of His teachings up to then – teachings centered on kindness and righteousness. He didn't argue with God here as he did concerning S'dom because there God implied nothing about future clarifications and here, in two ways, He did.

It was not only Avroham who didn't argue – and had faith in God and the ultimate goodness of the outcome. As we see twice in the parsha:

... וַיֵּלְכוּ שְׁנֵיהֶם יַחְדָּו...

...And they went, both of them, together...[73]

Avroham and Yitschok went together in both the physical and spiritual worlds. But Yitschok had an additional faith -- faith in his father's wisdom. He gave us the first example of *Emunas Chachamim* – faith in the wisdom of the great leaders of our age[74].

In the end – at the very last possible moment -- God does speak to Avroham – as He said He would. It's at a point beyond the power of the Ministering Angels in Heaven to comprehend.[75] It shows, as our Sages say, Tsadikim -- the Righteous on Earth -- are greater than the Ministering Angels.[76] The Tsadikim- like Avroham and his children -- must act to do God's will even in cases of extreme ambiguity. It's part of God's way of cultivating humility[77] in the hearts of His Disciples[78-A].

So, it's made clear that the elevation offering didn't require what it may have seemed to entail[78-B]. Instead, both Avroham and Yitschok are elevated – and their descendants after them – beyond the wisdom of the Angels in Heaven. They're elevated by their struggle to do God's Will and their faith that God will provide the necessary instructions - consistent with His Torah of Kindness - a blessing to all of the Families of the Earth [79].

[72A] This is the usual understanding. However, in addition to what we've said about the famous altar, R. Meir Leibish ben Yechiel Michel – Malbim [1809-79], shows אַחַד הֶהָרִים refers to a single, known mountain; the prefix would be מ, not ה, if one of several mountains was meant. [p209/ קה pdf p 204 התורה והמצוה Warsaw 1876, http://www.hebrewbooks.org/40102 & Transl. by Zvi Faier, v. 2, p217, 1979] **B** The phrase: אֶל-הַמָּקוֹם אֲשֶׁר-אָמַר-לוֹ הָאֱלֹהִים in 22:9 is the same – letter for letter -- as when Avroham was setting out at 22:3. This indicates that this was the place he'd already been told of – not merely the mountain. It's the place, not the mountain, that's identical. This is stressed in the trop with a *zarka* on הַמָּקוֹם at 22:9. Also, both at 22:3 & 22:9, the expression is in the singular, but at 22:9, it says 'they came...had told him of'. The Midrash says both Avroham & Yitschok were shown – by a cloud on the mountain - not told. This was a special sign that only they could see – but Yishmael & Eliezer couldn't. It meant that the latter two shouldn't go with Avroham & Yitschok on the final leg of the jouney [Ber. Rab 56:1-2. Pirkei d' Rabbi Elliezer has a pillar of fire as the sign]. If this showing was the telling, 'had told them of' would be expected.

C Malbim states "the words אֲשֶׁר אֹמַר אֵלֶיךָ do not pertain to the mountain but to וְהַעֲלֵהוּ שָׁם : offer him (=that) which I will say to you – i.e. , the ram." [Supra , התורה והמצוה same page]

D אֲשֶׁר [asher] is sometimes translated 'as', e.g.:

אֲשֶׁר לֹא-יִסָּפֵר צְבָא הַשָּׁמַיִם, וְלֹא יִמַּד חוֹל הַיָּם--כֵּן אַרְבֶּה, אֶת-זֶרַע דָּוִד עַבְדִּי, וְאֶת-הַלְוִיִּם, מְשָׁרְתַי אֹתִי.

"As the host of heaven cannot be numbered..." Jer 33:22

[73] Bireishis. 22:6 and 22:8

[74] "This act on Yitzchak's part -- to trust in his Chacham -- is the original source of the character trait passed down by legacy to later generations of Jews -- to have Emunas Chachamim, even in the face of apparent illogical reasoning". Rabbi Yissocher Frand. _____There's also connection with the idea of the oral law.get source

[75] The Angels in Heaven cried, saying it was out of the bounds to require Avroham to proceed on the basis of the usual understanding. Their tears fell on the knife and damaged it – so that it couldn't be used immediately for its intended purpose. Mid. Rab.Br. 56:5, 7 – on Is. 33:7-8. God responded to the pleas & tears of the Angels and ordered the most senior of the Ministering Angels –Metatron - to stop Avroham. [Midrash HaGadol מדרש הגדול - בראשית . [22:10, 22:12] 1902, col. 322 ___] So, also, we learn:

שערי דמעות לא ננעלו

'The gates of tears are never closed' [Bav. Metz., 59a, cit. Ps. 39:13]

[76] גדולים צדיקים יותר ממלאכי השרת Sanhedrin 93a

[77] The importance of humilty is stressed in several pieces in this sefer: וְהַצְנֵעַ לֶכֶת, עִם-אֱלֹהֶיךָ...Mic. 6:8. For humility in **A.** Public Life & **B.** Science, see: **A.** 'The Two Versions of Shabbes and The Marriage of Two Worlds'; & **B.** 'The Keshes B'anon – The Rainbow In The Clouds: Gateway To Physics And The Edge Of Unknowing'.

[78-A] דאמר רב הונא משם רבי אליעזר בנו של רבי יוסי הגלילי: משהה הקדוש ברוך הוא ומתלא עיניהם של צדיקים, ואח"כ הוא מגלה להם טעמו של דבר. כך אל הארץ אשר אראך על אחד ההרים אשר אומר אליך

Rav Huna in R. Eliezer's name –H' first places righteous in doubt – then reveals to them the meaning of the matter" Mid.Rab.Br 39:9; 55:7____

[78-B] Also: R. Yona ibn Janach-יונה אבן ג'נאח [Heb. Grammarian & MD~993–1050]: ל in לְעֹלָה is *double intendre* --also meaning "in place of"- like ל in '...the bricks were as stone (*le-aven* לְאֶבֶן)...the asphalt was as mortar (*la-chomer* לַחֹמֶר)' Gen 11:3.—so it also & ultimately meant "in place of a burnt offering".*Sefer Ha-Rikma*,ch. 6,p18, pdf. 51,Hebrewbooks_org_6415.pdf

[79] **On Torah & Kindness, see also, in this sefer: 'Camel Kindness', 'The Color of Kindness', 'Don't Muzzle the Beast', 'The Dimensions of Wisdom' & 'The Foundations of the Earth'. On Torah & Faith, see also: Hope.**

YAAKOV WENT OUT FROM BER-SHEVA & HE WENT TOWARD HARRAN[80]

Parshas Vayetze begins:

'And Jacob went out from Ber-Sheva, and went toward Harran.'

"וַיֵּצֵא יַעֲקֹב, מִבְּאֵר שָׁבַע; וַיֵּלֶךְ, חָרָנָה." BR.28:10

Yaakov Avinu was fleeing from his brother Esau who wanted to kill him.[81] He had every reason to just run away – to any place other than Ber-Sheva where his murderous brother was only waiting for an opportunity to do him in. Yet he didn't just run away. He ran towards a specific destination – Harran – and with a specific purpose, beyond just escaping for his life-- to find a wife among the family of his parents.

This is a very important lesson. It is not enough simply to run away from a bad situation – even if the situation is terrible – where your life is in danger if you stay. There are an infinite number of places and situations that are different from any given predicament. No matter how bad our present situation is though, nearly all of the alternatives will be worse. If we don't aim specifically for something that we understand will be better, our act of running away is much more likely to be "out of the frying pan, into the fire."

In general we should aim for the good – not away from the bad. This applies not only to our personal situations, but in questions of public policy. Merely rejecting the status quo because it seems bad is a good way to end up with something even worse. It is because most people understand this intuitively that they put up with bad public policies for so long. To make change in the public realm we should be able to provide a clear, concrete demonstration of the place we are aiming for before suggesting to people that they give up what they have – however bad it is. As it is written: PSALMS 34:15

"...*flee from evil and do good*...סוּר מֵרָע וַעֲשֵׂה-טוֹב..."

See, in this sefer GRASSHOPPERS AND GOVERNMENT, & JUSTICE, JUSTICE.

PROTECTED FROM ASTROLOGISTS

When Yitschak [Br:28:2-5,10] & Rivka sent their son Yaakov to Harran, they both knew that they were sending him to a place where he would find his mate and Rivka knew that in Harran he wouldn't be harmed by Esau [Br.27:43]. Rivka and Yitschak also knew Harran was known as the '...Land of *the Sons of the East* - אַרְצָה בְּנֵי־קֶדֶם...'[Br. 29:1]. Harran is ~730 km NNE of Ber-Sheva. It was the capital city at that time of the priests of the moon god. This cult had arisen in the great city of Ur ~1,100km due East of Ber-Sheva. They were '*the Sons of the East*'. Ur in the prior centuries had been in a low, flat, marshy land at the head of the Persian Gulf. It was subject to substantial tides and tidal bores twice a day. Without good knowledge of those tidal effects, it was unsafe to walk or take a boat.

The leaders of Ur studied the tides and linked them to the moon. They became great mathematicians and astronomers & looked for other linkages between the other heavenly bodies and life on earth. In the course of centuries --- before the time of Avroham – they learned to predict lunar and solar eclipses and the conjunctions of planets and constellations. They began to teach that the stars controlled the lives of people – and became very prominent astrologers. They led people to believe—and may well have believed themselves -- that the pattern of the stars at the time and place a person is born controlled their destiny.[82]

When their city, Ur and its moon-god temple were destroyed, the moon-god priests re-established themselves in Harran – a crossroads city that had been a commercial outpost of Ur. Their superiority in astronomy and mathematics enabled them to maintain their moon-god temple in that city for over 3,300 years.

Yitschak & Rivka knew that, however convincing the astrologer-priests of Harran were to most people, Yaakov would be protected from them– not only by his heritage, upbringing and personal study but by his unusual beginning: He was born under the same "star" as his very different brother, Esau. Br.25:23-34

SEE INTHIS SEFER -KSAV IVRI SECTION. THOUGHT OF IN 5783 [NOV-DEC 2022] IN CONNCECTION WITH WORK ON KSAV IVRI

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[80] **"Harran" in this sefer refers to the name of a city: חָרָן. "Haran" is a person: הָרָן . The 1st 2 paragraphs of this were said first in ~1991, while driving Rabbi Yankel (Yaakov) Horowitz together with Rabbi Avroham Yaakov & Family, from Boston to NYC R. Yaakov's family at that time included his wife Shoshana, & his then 5 children, Dassi, (Hadassa), Tovie (Tovah), Aryeh, Tsvi & Yisroel Meyer, Z"TsL. Dassi, the oldest, was ~7. I had been a Shabbes guest in the temporary Brookline home of Mishpocheh Yaakov many times over the months they'd been in Boston. I learned to say "Lichvod Shabbes Kodesh" from Dassi Yaakov – who, at that time, would say this over every special Shabbes food. R. Yaakov was with Rabbi Reuven Shapira when I first learned to daven maariv. (For more on this transformation, see the author's sefer A Sign Forever.) R. Shapira left me in the care of Mishpocheh Yaakov before returning shortly thereafter to Israel. Now, Mishpoche Yaakov was also returning to Israel -- following a long stay in Brookline for special medical care for their baby, Yisroel Meyer. When I next saw them – in their home in Zichron Yaakov in Israel -- Daasi was a Bas Mitzvah & their 6th child , Yehuditi (Yehudis) was 4. Yehuditi taught me that we say the brocha *netilas yadayim* after using the bathroom "*rok ba boker*" -- only in the morning.**

We were driving in a van rented on the credit card of Rebbitzen Sarah-Hindie Gross. Rabbi Gross was in the Lakewood Kolel of Brookline Massachusetts, where R. Horowitz was Rosh Kolel – with R. Naphtoli Beer. Sarah-Hindie is the oldest child of R. Yisroel Belsky, Shleeta. R. Belsky is mentioned at least twice more in this sefer, in: Micro-Kosher: Drinking Water For Chareidim and Don't Muzzle The Beast, as well as in A Sign Forever. See #18, p34 in notebook version of this sefer.

[81] Br. 27:41 ***And Esau hated Jacob because of the blessing wherewith his father blessed him. And Esau said in his heart: 'Let the days of mourning for my father be at hand; then will I slay my brother Jacob***

[82] **The belief that "bleed them 'til they faint" was an effective treatment for pneumonia led a hundred generations of well intentioned doctors to kill millions of people over thousands of years with this conterproductive treatmtnt.**

See in this sefer: THE QUESTION OF BLOODLETTING

DOING A MITZVAH WITH SHLEMES – IN A COMPLETE WAY[83]

We learn from Cha"ZaL that: שלוחי מצוה אינן ניזוקין

Those sent to do a mitzvah will not suffer hurt.
מסכת פסחים דף ח עמוד ב [also; Yoma 11a]

Yet, when Yoseph went to do a mitzvah for his father, he appears to have come to harm – being sold into slavery and spending thirteen years as a slave and prisoner in a foreign land. Even Yaakov Avinu thought that harm had befallen him – that he had been torn and killed by wild beasts. How can we explain this apparent contradiction?[84]

If we look closely at the Mitzvah that Yoseph was to do, we'll be able to understand how Yoseph came to harm. The Torah says:

...וַיֹּאמֶר לוֹ לֶךְ־נָא רְאֵה אֶת־שְׁלוֹם אַחֶיךָ וְאֶת־שְׁלוֹם הַצֹּאן וַהֲשִׁבֵנִי דָּבָר וַיִּשְׁלָחֵהוּ מֵעֵמֶק חֶבְרוֹן וַיָּבֹא שְׁכֶמָה:

***And Israel said unto Joseph, Do not thy brethren feed the flock in Shechem? come, and I will send thee unto them[85-A]. And he said to him, Here am I. And he said to him, Go, I pray thee, see whether it be well with thy brethren, and well with the flocks; [85-B] and bring me word again. So he sent him out of the vale of Hebron, and he came to Shechem.* [GEN.37:13-14]**

Yaakov asks him to bring back a report on the "shilom" of his brothers and the sheep. Shilom has the inyon of shalame – completeness. Yaakov asks Yoseph to bring back a complete picture of what his brothers – not just the seemingly negative things that he'd been reporting in the past [86]. Just as he would bring a complete report on the sheep – so also on his brothers. Before Yoseph reaches his brothers, he has an encounter with someone who asks what Yoseph wants.

וַיִּמְצָאֵהוּ אִישׁ, וְהִנֵּה תֹּעֶה בַּשָּׂדֶה; וַיִּשְׁאָלֵהוּ הָאִישׁ לֵאמֹר, מַה-תְּבַקֵּשׁ. וַיֹּאמֶר, אֶת-אַחַי אָנֹכִי מְבַקֵּשׁ; הַגִּידָה-נָּא לִי, אֵיפֹה הֵם רֹעִים.

…'What seekest thou?" And he said: "I seek my brethren. Tell me, I pray thee, where they are feeding the flock." **[GEN. 37:15]**

Why does the Torah need to tell us this? It's to give us an insight into what Yoseph is actually thinking as he approaches his brothers. When Yoseph responds to the question, he says only that he's looking for his brothers. The word "shilom"- or any version of it - is missing. Yoseph doesn't clearly recognize the mitzvah that he was actually sent to do.

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[83] The link between "shilom" in Vayeshev & "shilom" in MIketz was seen while standing outside the home of R. Z. Charlop in the Bronx. I was waiting to give advice to the family of a man who was nifter just before Shabbes Vayeshev & buried, Erev Chanukah, Yom Rishon of Miketz, 5769. I'd been particularly impressed by this family's efforts to do the 'Shmira' in the most thorough & complete way & wanted to tell them about my recent experiences with Service Corp. Inter'l – but never got to speak with them. See footnote 87 for details. It was first written in a letter to the family shortly thereafter. The connection between "shilom" in Vayeshev & doing mitzvahs in a complete way was seen over a decade before.

[84] Chazal say there were snakes & scorpions in the pit. [Shab 22a] That snakes are mentioned with scorpions indicates lethally poisonous snakes [eg. See footnote 355]. So he was protected from some major harm – as he could've been killed. This shows that having an incomplete concept of the mitzvah one is sent to do will provide partial protection- enough to save one's life. This idea of "partial credit" was thought of at the 5777 Shabbes Chanukah Table of R. Mordechai Brimm & Family & 10+ 'Brisk' students—when one of the students emphasized the issue of the snakes & scorpions after I had given it little weight.[Also see footnote 464]

But 13 yrs as a slave is harm & we're still left with a need to explain it.

[85-A] Or HaChaim [R.Chaim b. Attar 1696-1743] says he was protected only up to Shachem - the specific place mentioned by Yaakov – but Yosef was not sent "to Shechem" but "to them"-- his brothers.

[85-B] **Flock is also understood as the Jewish People: e.g. Is. 63:11, Jer. 23:3, Ez. 34:22, Ps. 100:3:**
"…His people, and the flock of His pasture. **...עַמּוֹ וְצֹאן מַרְעִיתוֹ**"

Also, Yaakov Avinu is, in effect, saying: ~'Just as you'ld bring me a complete report on the flock, so also, bring me a complete report on your brothers – not like the partial reports you've been bringing me about your brothers up until now.'

[86] **A.** This is consistent with **… וְיַעֲקֹב אִישׁ תָּם …** ***and Yaakov was an Ish Tam*** **…GEN 25:27.** Tam means both simple and pure. It can mean simple in the mathematical sense – as when we simplify an equation. Simplifying an equation means reducing a seemingly complex system of relations to its essence – without leaving anything important out. This kind of simplification is complete and all inclusive. Such completeness is the essence of truth – the attribute most strongly associated with Yaakov, as it is said … **תִּתֵּן** אֱמֶת לְיַעֲקֹב … give truth to Yaakov…[**Micah 7:20**) **. See in this sefer: TRUE AND FALSE אֱמֶת : שֶׁקֶר**

B. But one may reasonably ask here why would Yaakov – a man of truth – send his son into what should have been seen as a potentially dangerous situation – where his brothers had such enmimty for him? One answer, given by R. Mordecai Kornfeld, is that Yaakov knew that his sons went to Shechem to pasture the sheep on Yaakov's land in that area, that Yaakov's servant's would be there & they'd provide a measure of safety for Yosef. It wasn't reasonable to expect the brother's would go beyond Shechem. R. Kornfeld ends with: **"A man makes for himself many calculations, but the will of Hashem shall prevail!"** (Mishlei 19:21) kornfeld@jer1.co.il : Found at "Divrei Torah From Internet On Parshas Vayeishev – 5756" [Par. B added Dec.2/'18]
http://www.parsha.net/pdf/Bereishis/Vayeishev56.pdf

He appears to be on an errand to bring back the same kind of partial, prejudicial reports he'd brought in the past. He is no longer the sheliach mitzvah that he's supposed to be – and his protection is removed[87-A].

The next time that we find the word "shilom" is in parsha Miketz – where, thirteen years later, Yoseph is brought out of the dungeon and is standing before Pharaoh to interpret his dreams. Yoseph's first word's are:

וַיַּעַן יוֹסֵף אֶת-פַּרְעֹה לֵאמֹר, בִּלְעָדָי: אֱלֹהִים, יַעֲנֶה אֶת-שְׁלוֹם פַּרְעֹה.

And Yoseph answered Pharaoh, saying: 'It is not in me; God will give Pharaoh an answer of peace.' [GEN 41:16]

Though the translation of shilom here is peace, the word is actually the same one that we had where Yaakov gave Yoseph his instructions. There it's translated as meaning "well" - as in welfare. In both cases it has the inyon of shalame – completeness. Here Yoseph is remembering the original instructions from Yaakov Avinu – to bring a complete report about his brothers, to see the whole, integrated and unified picture and, in general to do mitzvahs in a complete way. The result is that Yoseph is able to see what the wise men and magicians of Mitzraim couldn't or wouldn't see: that Pharaoh's complex, two part dream was one[87-B,C, D].

וַיֹּאמֶר יוֹסֵף אֶל-פַּרְעֹה, חֲלוֹם פַּרְעֹה אֶחָד הוּא: אֵת אֲשֶׁר הָאֱלֹהִים עֹשֶׂה, הִגִּיד לְפַרְעֹה.

And Yoseph said unto Pharaoh: 'The dream of Pharaoh is one; what God is about to do He hath declared unto Pharaoh. [Gen 41:25]

In the merit of our doing all of our Mitzvahs in a more complete way, may we see the coming of the Moshiach Tsidkaynu, bimheyrah v'yomanu, אָמֵן *Awmain*

[87-A] Up to here, this chidush was conceived for & written in a letter 5759 [1/99] from Yerushalayim to Julius Klugmann of Washington Heights, NYC. It included the following additional comment:

> "The fact that Yaakov Avinu suffered so much as a result of Yoseph's failure to be covered as a sh'leach mitzvah, suggests that the sender has a responsibility to make sure that the sh'leach understands his mission. Even if the sh'leach is a great gaon and tsadik, the sender shouldn't rely on subtle hints." [#49, p. 43, cont on p. 41&44, notebook.]

> At Gen 46:30, Rashi has Yaakov saying that HaShem held him responsible for Yosef's apparent death – apparently from Midrash Tanchuma Buber, Vayigash, yud.

The chidush from this point forward was inspired by something that took place a decade letter -- Shabbes Vayeshev, 5769 -- when I volunteered to be an all night shomer in the morgue of Montefiore Hospital in the Bronx.

The family of the deceased, who lived nearby, chose to provide shmira on Shabbes – though they were told it wasn't necessary – that Shabbes is a shomer. They also wanted to do the shmira inside the morgue, though they were told it was OK to sit outside in the hall.

When I came, around 10:PM Friday night, the family had just been given permission by the hospital security service to sit inside the morgue. Since I was going to do shmira, the family went home and I went in with the security guard. Once inside the morgue, I checked that the meis was actually there in the vault I was to guard all night. It was gone! The morgue log book showed it had been taken out via another door that led directly to the street, only minutes before I entered. It had been removed by order of the Office of the Chief Medical Examiner of NYC to be autopsied on Shabbes against the wishes of the family & without medical or legal necessity. The autopsy was scheduled for early in the morning in a city hospital four miles away. As a result of my intervention, and the beautiful work of Ms. Rosa Parris, the ADN who was in charge of the hospital in the middle of the night, it was returned that night without autopsy.

[87-B] R. Yoseph Goodfarb said, when he heard this, that Yoseph also saw what he'd been doing was wrong with respect to his brothers--with his previous incomplete reports. He was able to better understand why he got in trouble & to begin the process of repentance. [Said in Yiddish in main shul of Zichron Moshe, Yerushalyim, DAY 1, CHANUKAH, 5776.]

[87-C] When I said this over in Hebron – with the idea of 'partial credit' [see footnote 84-A] - at the Shabbes Table of Rabbi Shalom Horowitz & Family, he noted that Yoseph did have a sense of doing the mitzvah with shlemes when he went beyond Shechem to Dothan in his efforts to honor his father & bring back a report. [Vayechi, 5777] R. Horowitz is one of the leading educators of the community & I thought he'd appreciate "partial credit" -- an idea I learned while helping Prof. V.I .Poupko, of Boston, to mark student math tests.

[87-D] [DAY 6&7 CH. '76] Yoseph's path to repentance here & his efforts that would ultimately lead his brothers to repentance as well, make him a ba'al tshuva – & it's tshuvah sealed with tears of joy. In this, he may've been the first to bring both himself & others to enduring tshuvah. The embrace of his father & uncle a generation before may've been the first – also sealed with tears of joy -- if we follow the opinion of Shimon bar Yochai that the kiss & tears were with a full heart. But the tshuvah in the case of Esau doesn't seem to have been so enduring. A generation before Esau, Yishmoel also repents of his wild ways -at the akeida & even more so at the leveya of his father Avroham – where he defers to Yitschok [Gen. 25:9] – tho' these aren't sealed with tears of joy.

Perhaps a sign that Yoseph is the Baal Tshuvah is his tears of joy in connection with tshuvah –while being unemotional when he goes from being a forgotten prisoner–slave to the Viceroy of Egypt – the equivalent, in the the material world, of winning the biggest lottery .

See Also in this sefer: BOWING SEVEN TIMES – BUT NOT EIGHT; JUDGING PEOPLE FAVORABLY: ANTIDOTE TO BASELESS HATRED [Particulary Part II] & GOD'S JOY, LOST FRIENDS AND CHANUKAH. & see: **"THE BIBLE: YOSEPH'S TEARS, PHARAOH'S HEART"** in the author's companion sefer: **A SIGN FOREVER: A MOTHER AND SON BECOME SHOMER SHABBES IN THE MODERN WORLD**

YOSEPH IN MITZRAIM -13 YEARS A SLAVE[88]

From the time that Yoseph is sold into in Mitzraim (Egypt) at the age of 17 to the time he is taken out of prison and becomes Viceroy to Pharaoh at the age of 30, Yoseph spends thirteen years as a slave. What did Yoseph do to deserve such punishment ? Why thirteen years and not some other number? To answer these two related questions we should first remember that Yoseph is known to us now as "Yoseph Ha Tsadik" -- Yoseph The Righteous[89] – and we say that the Tsadikim –The Righteous – are "judged to a hair's breadth"[90].

Things that would not be considered serious offenses if done by an ordinary person are treated as major crimes when done by a tsadik. We say that if the Tsadikim do even a small thing wrong, those of us who are further away from complete tsidikus – from complete righteousness – will do even worse things. By the time we get to the Jew who is at the margin of society, the hair's breadth violation of the tsadik will become a major crime – a capital offense -- in anyone's reckoning[91].

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[88] See #21, p46 and #23, p48 in notebook version Sefer Chidushei Torah. It derives from an experience where it was plain that the power of yichus rescued me and the seemingly unmarried woman I was with from a situation -- as it rescued Yoseph. It was a situation where I failed to recognize the importance of the fences around the Torah.

[89] יוסף הצדיק Yoma 35b

[90] **A.** "...Hashem deals strictly with those around Him, even to a hair's breadth." Yev 121b. "...the righteous are punished [in this world] even for trivial offenses while the wicked are punished only for the most grievous ones. The truth of this statement can be illustrated from the lives of Moses, Aaron, Nadab & Abihu, who were punished for trivial offenses. (Tanna D'vei Eliyahu Rabbah, Ch. 2,ER p.11). Trans: William G. Braude & Israel J.Kapstein, p.22, JPS, 1981

B. The "beis din - בית דין" of the brothers that, according to some commentators convicts Yoseph as a rodef [not found in "legends of the Jews' see " פרשת ויגש Tochacha, Reconciliation And Galus p 4."Some commentators hold that the brothers had never regretted selling Yosef and still held that he was a *Rodef*, threatening their own future with the Jewish people" citing, note 5, Sforno: Br 42:21,2,8 ___ ___], was as illegitimate and incomplete as Yoseph's nit-picking reports. To be true sons of Israel, they must be Tam- complete whole and wholesome. It was a bes din in which they were involved both as plaintiffs and relatives—excused only in part as a perceived rodef situation.

C. Yoseph's realization of what he should have been doing when reporting on his brothers – bringing complete reports – rather than nit-picking – would also have taught him how his actions were affecting his brothers and why they acted toward him as they did. He had the sense that if they were put in a similar situation again they would realize what they had done—that it was an error – and want to be forgiven and reconciled with Yoseph.

D. R. Yitzchak Breitowitz noted in his Beis Midrash drosha on leyl Shabbes Vayigash 5778 that the reconciliation between & among Yoseph & his brothers was necessary for the achdus that would give the Jews strength to survive the coming long & deep gulles – in which we sank to the 49th level of tumah . He noted the preservation of the language clothing & names as an indication of that achdus. But see in this sefer an apparent contradiction to this last point at **"AND THEIR CRY CAME UP UNTO GOD"**

[91] It has been said that if the G'dolim—the great rabbis of the time – in Volozhin, even thought about doing forbidden work on Shabbes, the ordinary Talmud Scholars would talk about doing forbidden work on Shabbes and the marginally aware Jew would forget about keeping Shabbes altogether. [Yisroel Salanter?] Consider the story of Yehudah ben Bava--- יהודה בן בבא :

מעשה בחסיד אחד שיצא לטיול בכרמו בשבת וראה
שם פירצה אחת וחשב לגדרו במוצאי שבת אמר
הואיל וחשבתי לגדרה איני גודרה עולמית. מה פעל
לו הקב"ה זימן לו
סוכה אחת של נצפה ועלת לתוכה וגדרתא ממנה היה
ניזון וממנה היה מתפרנס כל ימיו.

Looking at his beautiful walled garden on Shabbes & noticing that there was a hole in one of the walls, he first thought about fixing it after Shabbes. Then he realized that he had thought about doing forbidden work on Shabbes – and resolved – to teach himself a lesson – never to fix the wall . The next day he found that the hole had been sealed by a נצפה (caper bush) [some say by a great tree] that sprang up over night and he derived sustenance from it and gained benefit from it his entire life.[NOTE CONT. NEXT PAGE]

The thirteen years taken as a whole is itself an indicator of what is going on here. It is a kind of Bar Mitzvah process -- a thirteen year coming of age. It turns an immature teenager – a nar[92] -- into an ish -- a man. He becomes a man worthy of being called Tsadik –who is in a position to lead the world in the Derech Hashem – the Way of God -- and save the lives of millions.

The thirteen years however were not uniform. They were broken up into three general time periods. First there was Yoseph's initial year -- as a slave/ steward in Potiphar's house. Then there were ten years when Yoseph was a slave and in prison -- up to when he interprets the dreams of the Chief Butler and Chief Baker and they are taken out of prison to their respective fates. In the last two years, Yoseph is a slave, a prisoner and forgotten. [93]

The first question we might ask here is why the punishments for whatever trespass are meted out in years – why not in months, or weeks or days? We say that there are 365 negative commandments and 248 positive commandments[94]. This reminds us that the negative commandments – the things that we are not supposed to do -- are an ever-present responsibility. We are not to murder, not to steal, not to worship idols 365 days a year, every year.[95] The 248 positive commandments are connected to the traditional count of 248 bones – that we should be trying to do the things that we are supposed to do with all our physical ability.

So when Yoseph commits what appears to be a relatively minor violation of a negative commandment – like bringing incomplete reports about his brothers – the tsadik-to-be gets a full year. The midrash says that for criticizing his brothers for looking at Canaanite women, he got a year of being subjected to one of the most systematic and intensive efforts at seduction by a married woman – Potiphar's wife -- one can imagine[96]. The same midrashim say that because Yoseph brought incomplete reports about ten of his brothers, he got an additional ten years – one for each brother[97]. But the first year – as slave-steward in Potiphar's house -- and the following ten years -- as a slave in prison -- are qualitatively different. They

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From: Talmud Yerush. Shabbos 15:3; 78a-b ____ Also in Gemara Shab, Bavli, 150b. Text says "a pious man". Rashi says, at Shab. 121b that this generally means either Yehudah ben Bava or Yehudah ben Ilai .[note 4 in Eng. Soncino]

[92] The Torah makes a point of calling Yoseph a 'nar' – after it says that he was seventeen. It was not just that he was young, he was an immature person –one of the meanings of the Hebrew word. Bireishis 37:2.

[93] Midr Tanchuma, Vayeshev, Ch.8, connecting Gen. 39:10

" ויהי כדברה אל יוסף יום יום " --
as she spoke to Joseph day by day" ,

with Esther 3:7:

" מיום ליום ומחדש לחדש שנים עשר " --
from day to day, & from month to month, to the 12th month'

This is the time that Potiphar's wife tried to seduce him – before he was thrown in prison. Here is a link to this source in Hebrew: http://kodesh.snunit.k12.il/tan/b0009.htm

That he should have been in prison only ten years is given in Midrash Tanchuma Chapter 9 .

[94] Talmud, Makkos, 23b

[95] There are, of course, some negative commandments that are not applicable all year – like not working on Shabbes, not eating on Yom Kippur and not having chometz in ones home and not eating chometz on Passover. None the less, this is the basic idea.

[96] Midrash Rabbah 84.7 – citing: וּמֹאזְנֵי, פֶּלֶס כִּיס-אַבְנֵי, מַעֲשֵׂהוּ כָּל; לַיהוָה--מִשְׁפָּט.
"… Honest scales and balances are the Lord's." **Prov. 16:11**

[97] Midrash Tanchuma, 1 180, S Buber, Vilna 1885 – as cited by Louis Ginzberg, Legends of the Jews at "Joseph in Prison", found at p 359 of 2003 edition.

are also separated by a remarkable series of events that the Torah recounts in detail. This suggests that the reason for this additional ten years is qualitatively different from the reason for the first year's punishment and is related to the events that the Torah recounts just before Yoseph is thrown in prison.

What did Yoseph do that he got himself thrown in prison? Potiphar's wife had been after Yoseph for a year. She had already said, outright:

… שִׁכְבָה עִמִּי …
…'Lie with me.'…
BIREISHIS 39:7 (PART)

And Yoseph, the very attractive young man – a slave, alone in a strange land -- Yoseph, the tsadik–to-be, refused. So she appears to have taken a more nuanced approach.

וַיְהִי, כְּדַבְּרָהּ אֶל-יוֹסֵף יוֹם יוֹם; וְלֹא-שָׁמַע אֵלֶיהָ לִשְׁכַּב אֶצְלָהּ, לִהְיוֹת עִמָּהּ.

And it came to pass, as she spoke to Joseph day by day, that he hearkened not unto her, to lie by her, or to be with her.
[BIREISHIS 39:10]

These softer but repeated entreaties were also not heeded – but they were not directly refused. Then we read in the next verse:

וַיְהִי כְּהַיּוֹם הַזֶּה, וַיָּבֹא הַבַּיְתָה לַעֲשׂוֹת מְלַאכְתּוֹ; וְאֵין אִישׁ מֵאַנְשֵׁי הַבַּיִת, שָׁם--בַּבָּיִת.

And it came to pass on a certain day, when he went into the house to do his work, and there was none of the men of the house there within,

Here the meforshim ask: What does it mean that Yoseph "went into the house to do his work"? Doesn't Yoseph know that with "none of the men of the house there within" he should not go in to be in the same house with Potiphar's wife – the woman who has been trying to seduce him for a year? The Meforshim say it means that Yoseph is slipping – "to do his work", they say, is a euphemism for Yoseph succumbing to temptation.[98]

He might have reasoned: to lie with her – a married woman – that's adultery -- that's absolutely forbidden by Torah Law. But just to lie by her – that's not adultery and just to be with her – in the same room, but not on the same bed, that's certainly not adultery. So he went in to appease her and to please himself – just to be in the same room – as she had asked. He relied on his natural tsidkus to keep him safe from sin – even though he was in the same room. He broke the fence around the Torah – the fence that keeps us at a distance from the things that are absolutely forbidden so that we should not slip and go "all the way."[99] And that's what almost happened here. He got close enough to Potiphar's wife that she was able to grab hold of his garment --- but he was able to draw on the strength of his yichus – his heritage – and flee outside. For breaking the fence around the Torah -- around one of the negative commandments explicitly given in the "aseres hadibros"-- the Ten Commandments -- Yoseph got 10 years in prison.

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[98] **Sotah 36b**

[99] משה קיבל תורה מסיני ומסרה ליהושע, ויהושע לזקנים, וזקנים לנביאים, ונביאים מסרוה לאנשי כנסת הגדולה. הם אמרו שלושה דברים: הוו מתונים בדין, והעמידו תלמידים הרבה, ועשו סיג לתורה.

…They [the Men of the Great Assembly] would always say these three things: Be cautious in judgment. Establish many pupils and make a fence around the Torah.
[PERKEI AVOS 1:1]

This insight into the importance of fences and yichus, here, and in similar circumstances, is a result of personal experiences in the first years that I was keeping Shabbes. Yoseph, still the nar and not yet realizing the importance of fences, may have relied too much on his own tsidkus and may not have realized the peril.

What about the last two years? As we've seen, the midrash says that Yoseph was only supposed to be in prison for ten years but that something he said to the Chief Butler merited him another two. What did he say? Yoseph interprets the Chief Butler's dream to mean that the Chief Butler will be released in three days and restored to his position serving Pharaoh. Then Yoseph adds the following two sentences:

כִּי אִם-זְכַרְתַּנִי אִתְּךָ, כַּאֲשֶׁר יִיטַב לָךְ, וְעָשִׂיתָ-נָּא עִמָּדִי, חָסֶד; וְהִזְכַּרְתַּנִי, אֶל-פַּרְעֹה, וְהוֹצֵאתַנִי, מִן-הַבַּיִת הַזֶּה. כִּי-גֻנֹּב גֻּנַּבְתִּי, מֵאֶרֶץ הָעִבְרִים; וְגַם-פֹּה לֹא-עָשִׂיתִי מְאוּמָה, כִּי-שָׂמוּ אֹתִי בַּבּוֹר.

[14] But have me in thy remembrance when it shall be well with thee, and show kindness, I pray thee, unto me, and remember me unto Pharaoh, and bring me out of this house. [15] For indeed I was stolen away out of the land of the Hebrews; and here also have I done nothing that they should put me into the dungeon. **BIREISHIS 40:14-15**

In explaining why Yoseph gets another two years, the Midrash says:

ולמה הוסיפו לו שם ב' שנים אמר הקב"ה אתה השלכת בטחוני ובטחת בשר המשקים ואמרת לו שתי זכירות כי אם זכרתני והזכרתני תשתכח ב' שנים בבית הסהר

" …you abandoned your trust in Me and placed your trust in the chief butler - asking him twice to remember you – so, you will be forgotten in prison for another two years."

This answer, [from Midrash Tanchuma, Ch. 9] concentrates on the first possuk: 40:14. There's no mention of God at all in this plea – though just before interpreting the dreams for the Butler and Baker, Yoseph had said:

'Do not interpretations belong to God?'
הֲלוֹא לֵאלֹהִים פִּתְרֹנִים
[BIREISHIS 40:8]

So Yoseph understood that the Butler to whom he addressed his plea for aid had a sense of God in the world. It was not because the Butler would not appreciate a reference to God, that Yoseph left God out.[100]

There is another explanation of why two years were added to Yoseph's sentence – based on the second possuk: 40:15. There, Yoseph protests his innocence on two counts. He did not yet fully appreciate that, however true these statements might be as far as an ordinary person was concerned, in his case he was guilty and deserving of correction. He was sold into slavery for bringing incomplete, prejudicial reports about his brothers and he was imprisoned for breaking the fence around the Torah when he went in with Potiphar's wife – "to do his work."[101]

It was only two full years later that Yoseph became a true "Bar Mitzvah"[102]

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[100] I heard from R. Yisroel Dov Biderman at his tish [in his home at #2 Rech Chagiz, Jerus., leyl Shabbes Vayeshev, 5778] in the name of R. Moshe Shternbuch, that asking once to be remembered was the hishtadlus – השתדלות -- the normal effort one is to make to improve one's situation. The 2nd "remember" was beyond what was necessary and nullified the first – leading to two extra years.

[101] The two statements were also superfluous –as the Butler would have no way of verifying them and would not want to report unverified statements to Pharaoh. As it is , even when he does mention Yoseph to Pharaoh, he makes no mention of either of these two claims of innocence

[102] See, in this sefer, at DON'T MUZZLE THE BEAST, how one of our greatest sages, Yehudah HaNasi, suffered 13 years of pain for what seems a minor infraction. Also, Shimon bar Yochai and his son spent 13 years in a cave to escape a death sentence by the Romans -- for saying that everything the Romans did was for their own good. At the same time, Yehuda ben Ilai saw good in what the Romans did and was left in peace. See also in this sefer BOWING SEVEN TIMES – BUT NOT EIGHT [on the spiritual and material worlds] & THE LOMED VOV TSADIKIM

– a dedicated son of the Mitzvah's of Hashem. Only then he went from being a nar to an ish – from a boy to a man[103]

Then first did he fully comprehend why he had been a slave for 13 years. The first sentence out of his mouth when he comes before Pharaoh is:

וַיַּעַן יוֹסֵף אֶת-פַּרְעֹה לֵאמֹר, בִּלְעָדָי:
אֱלֹהִים, יַעֲנֶה אֶת-שְׁלוֹם פַּרְעֹה.

And Joseph answered Pharaoh, saying: 'It is not in me; God will give Pharaoh an answer of peace.'
BIREISHIS 41:16

The word shilom in the Hebrew – translated as peace in the English – is identical to the word that was used in the instructions that his father Yaakov had given to him 13 years before. As we discuss elsewhere in this sefer[104] this word – which has the idea of completeness -- tells us that Yoseph finally understands what he is supposed to be – a Complete Tsadik.

He also understands what he should have been doing – in the case of failure to give the complete picture when talking about his brothers; in his failure to completely observe the fences around the Torah – when he 'went in to do his work' -- and when he claimed innocence in these two matters. [105]

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[103] He is referred to as a nar by the Chief Butler in Miketz, Bireshis 41:12. Since we know from the context that he is 28 years old and not married, it is not necessary for the Torah to call him a nar – except that he may have appeared to be immature in some way to the speaker. (Some meforshim say that the Butler called him a nar as part of a strategy to make him seem less important.)

After he stands before Pharaoh, invokes God in interpreting his dreams and offers advice on how to deal with the impending crisis, he is called an ish – a man – in whom is the spirit of God. This is the first instance where he is called a man by other men.

When he is still 17 – near the beginning of his life in Potiphar's house, the voice of the Torah, at Bireishis 39:2, refers to him as "ish."

וַיְהִי יְהוָה אֶת-יוֹסֵף, וַיְהִי אִישׁ מַצְלִיחַ; וַיְהִי,
בְּבֵית אֲדֹנָיו הַמִּצְרִי.

And the LORD was with Joseph, and he was a prosperous man; and he was in the house of his master the Egyptian.

After close to a year in Potiphar's house, there is a reversion. At 39:11, we have:

וַיְהִי כְּהַיּוֹם הַזֶּה, וַיָּבֹא הַבַּיְתָה לַעֲשׂוֹת מְלַאכְתּוֹ;
וְאֵין אִישׁ מֵאַנְשֵׁי הַבַּיִת, שָׁם--בַּבָּיִת.

And it came to pass on a certain day, when he went into the house to do his work, and there was no man of the men of the house there within,

It says ***"there was no man of the men of the house…"*** after it says Yoseph ***"went into the house…"*** It could have been written ***"…there was no man…"*** before he went in – which is the way we would expect it. The way it is actually written includes Yoseph as ***"no man."*** (See also Midrash Rabbah and Meam Loez). Just as at this point he was slipping morally, so he was also slipping back to his status as "nar." It reflects an all too usual pattern of spiritual development – with the proverbial "two steps forward and one step back."

We should also note that the thirteen year period is bracketed by Yoseph being thrown into a pit הַבּוֹר at 17 and taken out of what is called a dungeon but is, in Hebrew the same word-- הַבּוֹר -- at 30. He was put into a jail -- בֵּית הַסֹּהַר – not a pit or dungeon – by Potiphar. The use of the word הַבּוֹר connects the two events – 13 years apart -- suggesting that he was now finally free of the limitations – the narishkite-- that got him thrown in the pit in the first place.

[104] See: **DOING A MITZVAH WITH SHLEMES – IN A COMPLETE WAY**

[105] The third understanding noted here was added Motzei Shabbes Miketz, 5778, after learning the Parsha in Ohr Someyach Jerusalem , that leyl Shabbes.

WHY MEN HAVE BEARDS—AND WOMEN DON'T[106]

II GATEWAY TO ZOOLOGY

The laws of modesty in Jewish tradition require that men in particular not look at the "nakedness" of women.[107] This may seem to be a simple matter – but nakedness in the Torah World is not the same as what we would expect from the plain meaning of the words. Parts of a woman's body – like her upper arms and her legs above the knees -- are considered off limits for a man to look at[108]. As a practical matter, we should be able to tell if a person we're approaching is a man or a woman so that if the prohibited parts are unduly exposed, men can avert our gaze or take other defensive measures.

Usually, it isn't difficult to tell the gender of an approaching adult. Men and woman look quite different – even at a distance of a half-minute walk – 30 meters. One of the features that were once used to help us distinguish men from women – even at such distances – was that most adult men had beards. If the primary purpose of a man's beard was -- and is -- to help distinguish men and women at a distance, why, dafke, a beard. Why not some other distinctive growth or coloration?

I consulted traditional Torah commentaries that I was able to read in English and didn't find any that had even raised the question. I tried secular books and found a promising title on the subject in the N.Y. Public Library[109] - but it was an old rare book and was missing from the shelves. I looked in scientific books about beards and found quite a bit of what turned out to be useful information, but nothing that gave a good answer to my question: "Why men have beards – and not women?"

Then I remembered something about Yoseph's beard. It was when Yoseph met his brothers for the first time as Viceroy of Egypt. We read that while he recognized all of them – and all were there except Binyamin - they didn't recognize him.

וַיַּכֵּר יוֹסֵף, אֶת-אֶחָיו; וְהֵם, לֹא הִכִּרֻהוּ.

And Joseph knew his brethren, but they knew him not.
BIREISHIS 42:8

The mforshim say that it was because Yoseph, who had been Viceroy of Egypt for eight years at that point, had a full beard. When the brothers had last seen him – 21 years before – he had been a seventeen year old Nar – an immature teenager with no beard.[110]

So how does this help us with our question of why men have beards? It was when Yoseph was a beardless Nar of seventeen that his father had been misled to think that his beloved son had been torn by wild beasts.

... חַיָּה רָעָה אֲכָלָתְהוּ; טָרֹף טֹרַף, יוֹסֵף.

…an evil beast hath devoured him; Joseph is without doubt torn in pieces. **BIRESHIS 37:33 [PART]**

The same father, Yaakov Avinu who used the word for "torn" here in speaking to what he believed were all of his surviving sons, uses it again when speaking with all of them – including Yoseph. When he gives blessings to his children he says:

בִּנְיָמִין זְאֵב יִטְרָף...

Benjamin is a wolf that raveneth… **BIRESHIS 49:27 [PART]**

I remembered then what I learned from my father, Z"L, about how wolves, dogs and lions attack and kill the larger animals that are so often their prey. They go for the throat. If a wolf went for the throat of a man with a full beard, it would get a mouth full of hair and the man would have just enough time to grab the wolf's throat and kill it. So a full beard would be useful to protect men from wolves.

This still doesn't answer our question. If a beard is useful to men, why don't women have beards also? Men and women care for sheep in the Torah - the sheep that are so often the prey for

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106 See #68, p12 of the notebook version of this sefer.

107 Shulchan Aruch:Orach Hayim:75--Mishna Brurah, _____

108 This question arose after sitting at the Shabbes table of a rabbi in NYC whose then unmarried daughter was sitting right across from me. She was apparently wearing a borrowed long sleeved dress that had an uncomfortable seam just by her elbow. So, when she wanted to rest her elbow on the table, she rolled up her sleeve a bit, exposing part of her upper arm that I wasn't supposed to look at. I averted my gaze. I began to notice how often I had to avert my gaze just walking in the streets of NYC. Each time I averted my gaze, I was doing a mitzvah. I was helped in these mitzvahs by the fact that we can tell men from women at some distance – by, among other things, the fact that at least some men have beards. **See in this sefer: GUARDIANS OF THE SOUL**

109 The book may've been Pro Sacerdotum Barbis, Valeriano Piero, English transl., original 1534, now a NYPL ebook. Not yet consulted.

110 This is among the things that we learn from the word 'nar'.

wolves. Both Yaakov Avinu and Rochel Emenu took care of sheep; Moshe and Tsipora were also both shepherds[111]. The reason that men have beards and women don't is that while both care for sheep that are so often the target of wolves, they care for the sheep under very different circumstances. The women care for the sheep relatively near their homes – near established drinking wells. The men on the other hand often go with the sheep out into the wilderness – far from home for days or weeks at time[112]. It is in these wild areas that wolves are far more likely to be found. It is in these areas that having a beard to protect ones throat from a wolf attack would be a real asset.

After coming to this insight, I realized that my own beard at the time did not cover my throat. Though it had not been cut in more than 7 years, it was thin, short and scraggly. It was not much good for wolf protection. This led me to a second insight. From what I had read about beards in the scientific literature, I realized that I was actually pulling out so much of the hair in my beard each day, that in the course of a year I was pulling out about a year's growth. So I stopped. By the next year, my beard was covering my throat. It was more than twice as long, twice as thick and much darker than before. It was the first example of one of my chidushei Torah having a direct, visible and positive impact on the physical world. But why do men have mustaches and women not? This may also be to help protect men in the wilderness – where women usually didn't go -- from the dust and the freezing wind and snow.

IIGateway to Zoology:The Gate of the Wolf

After this was written, a friend asked: How would this apply in societies "before the domestication of sheep…"? I answered: Men would hunt in the wilderness – among many wolves. The women would stay closer to home -- where wolves were few.

[111] Gen. 29:6, Exod 2:16

[112] Gen 37:22 –Where Yoseph was thrown in the pit ; Exod. 3:1 – Moshe at Horeb

YOSEPH THE WISE

After Yoseph is seemingly reconciled with his brothers[113] we read:

לְכֻלָּם נָתַן לָאִישׁ חֲלִפוֹת שְׂמָלֹת וּלְבִנְיָמִן נָתַן שְׁלֹשׁ מֵאוֹת כֶּסֶף וְחָמֵשׁ חֲלִפֹת שְׂמָלֹת:

To all of them he gave each man changes of raiment; but to Benjamin he gave three hundred *pieces* of silver, and five changes of raiment. **GEN 45:22**

It seems Yoseph is playing favorites with his brother Binyamin – something that would irritate his ten other brothers. The Midrash notes that the five changes of garments given to Binyamin point to the five extra royal garments that Binyamin's descendent, Mordechai, will wear in Shushan when he is honored by the King Achashverosh. But this will be more than a thousand years in the future[114]. Is this a reason to possibly stir up jealousy after so many years of intra family difficulties and after a tearful reconciliation? This explanation also doesn't account for the 300 pieces of silver Binyamin gets – while the ten other brothers don't get any silver. A hint that there is something going on here that isn't obvious is that חֲלִפוֹת "changes" is written full – with a vov-- when it comes to the brothers while Binyamin's "changes" are lacking a vov[115]. Ibn Ezra says in the name of Avroham ben Moshe – the son of the Rambam – that the ten brothers received two changes of garments each. So Binyamin received 3 more garments and 300 pieces of silver – suggesting that these extras were a compensation for three things that Binyamin suffered that the 10 brothers didn't. These three things were I. Being taken from his father; II. Having Yoseph's goblet planted and discovered in his sack; and, III. Being told that he only would be kept by Yoseph as a slave.[116]

Since the ten brothers knew Binyamin was made to suffer in these three 'extra' ways–as part of Yoseph's plan to test them, Yoseph knew they wouldn't be jealous and would see it as equitable compensation[117]

[113] "Now therefore be not grieved, nor angry with yourselves, that ye sold me hither: for God did send me before you to preserve life… Moreover he kissed all his brethren, and wept upon them: and after that his brethren talked with him. Gen 45:5 & 15 [SEE ALSO: **BOWING SEVEN TIMES -- BUT NOT EIGHT** – where crying is an indication of sincerity.

[114] "For Raba b. Mehasia said…in the name of Rab: Through two sela's weight of fine silk which Jacob gave to Joseph over what he gave to his brothers, a ball was set rolling and our ancestors eventually went down to Egypt! — R. Benjamin b. Japhet said: He gave him a hint that a descendant would issue from him who would go forth before a king in five royal garments, as it says, "And Mordecai went forth from the presence of the king in royal apparel of blue etc." Tal. Bav, Megilla 16b, citing Esther 8:16.

[115] The sefer חסר ומלא בתנ"ך : בסדר א"ב explains this by noting that the 10 brothers were different sizes, so "changes" included both the meaning of number of garments & the different sizes of each – but for Binyamin, they were all one size [see **GUILT AND INNOCENCE** for more on this sefer & חסר ומלא.

[116] I. Gen 43:6-15;II.44:2&12;III 44:17 [Midrash Yashar [Venice,1642] has Yoseph informing Binyamin of his plan – but the 10 didn't know. This midrash has no known manuscripts.]

[117] Thought of after a talk with Binyamin L. of China, incl. cite of midrash that didn't account for 300 shek. or question of jealousy. [on p. 112-114,"Veha'arev na: halachic challenges and solutions based on the weekly parshah", R. Yitzchak Zilberstein,adapted by E.Chazani, '13, Feldheim],Ohr Someyach, Tishrei, 5779

THE TWO VERSIONS OF SHABBES
AND
THE MARRIAGE OF TWO WORLDS[118]

It is well known that there are two versions of the Aseros Hadibros -- the Ten Statements -- more popularly known as the Ten Commandments. One set is in Parshas Yithro in the book of Shemos – Exodus 20:1-13. The other is in Parshas V'Eschanon in the book of D'varim -- Deuteronomy 5:6-17. It is also well known that the commandment to keep Shabbes is different in these two versions. In Shemos, the commandment begins with the word Zachor -- remember. In D'varim, it begins with Shamor -- guard.

In both sets of commandments, the Mitzvah of Shabbes is in the same position. It follows the commandments that are clearly "Bain Adom l'makom" – Between Man and God – and it precedes the commandments that are clearly "Bain Adom l'Choveroh" – Between Man and his Fellow.

The two versions of the mitzvah to keep Shabbes are far more different though than just their first words would indicate. [English trans. is on next pg.]

SHEMOS 20:7-10

זָכוֹר אֶת-יוֹם הַשַּׁבָּת, לְקַדְּשׁוֹ.
שֵׁשֶׁת יָמִים תַּעֲבֹד, וְעָשִׂיתָ כָּל-
מְלַאכְתֶּךָ. וְיוֹם, הַשְּׁבִיעִי--
שַׁבָּת, לַיהוָה אֱלֹהֶיךָ: לֹא-
תַעֲשֶׂה כָל-מְלָאכָה אַתָּה וּבִנְךָ
וּבִתֶּךָ, עַבְדְּךָ וַאֲמָתְךָ וּבְהֶמְתֶּךָ,
וְגֵרְךָ, אֲשֶׁר בִּשְׁעָרֶיךָ. כִּי
שֵׁשֶׁת-יָמִים עָשָׂה יְהוָה אֶת-
הַשָּׁמַיִם וְאֶת-הָאָרֶץ, אֶת-הַיָּם
וְאֶת-כָּל-אֲשֶׁר-בָּם, וַיָּנַח, בַּיּוֹם
הַשְּׁבִיעִי; עַל-כֵּן, בֵּרַךְ יְהוָה
אֶת-יוֹם הַשַּׁבָּת--וַיְקַדְּשֵׁהוּ.

D'VARIM 5:11-14

שָׁמוֹר אֶת-יוֹם הַשַּׁבָּת, לְקַדְּשׁוֹ, כַּאֲשֶׁר
צִוְּךָ, יְהוָה אֱלֹהֶיךָ. שֵׁשֶׁת יָמִים
תַּעֲבֹד, וְעָשִׂיתָ כָּל-מְלַאכְתֶּךָ. וְיוֹם,
הַשְּׁבִיעִי--שַׁבָּת, לַיהוָה אֱלֹהֶיךָ: לֹא
תַעֲשֶׂה כָל-מְלָאכָה אַתָּה וּבִנְךָ-וּבִתֶּךָ
וְעַבְדְּךָ-וַאֲמָתֶךָ וְשׁוֹרְךָ וַחֲמֹרְךָ וְכָל-
בְּהֶמְתֶּךָ, וְגֵרְךָ אֲשֶׁר בִּשְׁעָרֶיךָ--לְמַעַן
יָנוּחַ עַבְדְּךָ וַאֲמָתְךָ, כָּמוֹךָ. וְזָכַרְתָּ, כִּי
עֶבֶד הָיִיתָ בְּאֶרֶץ מִצְרַיִם, וַיֹּצִאֲךָ יְהוָה
אֱלֹהֶיךָ מִשָּׁם, בְּיָד חֲזָקָה וּבִזְרוֹעַ
נְטוּיָה; עַל-כֵּן, צִוְּךָ יְהוָה אֱלֹהֶיךָ,
לַעֲשׂוֹת, אֶת-יוֹם הַשַּׁבָּת.

[118] Conceived & told Parshas V'Eschanon 16 Av, 5752, inspired by the life of Shlema ben R. Sinai (Solomon Adler) of Leeds, Eng.; NYC & Wash. D. C. , USA & Peking/Beijing, China. Prof. Adler, my father's first cousin, would have been 10th in a line of rabbis from father to son. When still a young teenager -- ~14 -- he was inspired by Chou En-lai to help make a better China. My sense is that he was protected from being too involved in the excesses of the revolution in China--& ultimately from being a physical victim of the revolution himself – by the "Yechis"—the sense of where he came from – the 9 generations of Rabbis and the Torah environment in which he was raised. (For more on Solomon Adler, see the author's sefer, A Sign Forever.).

SHEMOS 20:7-10 Yithro	D'VARIM 5:11-14 V'Eschanon
"Remember the sabbath day, to keep it holy. Six days shalt thou labour, and do all thy work but the seventh day is a sabbath unto the LORD thy God, in it thou shalt not do any manner of work, thou, nor thy son, nor thy daughter, nor thy man-servant, nor thy maid-servant, nor thy cattle, nor thy stranger that is within thy gates for in six days the LORD made heaven and earth, the sea, and all that in them is, and rested on the seventh day; wherefore the LORD blessed the sabbath day, and hallowed it"	"Observe the sabbath day, to keep it holy, as the LORD thy God commanded thee. Six days shalt thou labour, and do all thy work; but the seventh day is a sabbath unto the LORD thy God, in it thou shalt not do any manner of work, thou, nor thy son, nor thy daughter, nor thy man-servant, nor thy maid-servant, nor thine ox, nor thine ass, nor any of thy cattle, nor thy stranger that is within thy gates; that thy man-servant and thy maid-servant may rest as you do. And thou shalt remember that thou was a servant in the land of Egypt, and the LORD thy God brought thee out thence by a mighty hand and by an outstretched arm; therefore the LORD thy God commanded thee to keep the sabbath day."

In the first version – in Yithro – the mitzvah speaks of God creating the world in six days and resting on the seventh. In this mitzvah, we are to emulate God and rest on the seventh day -- as God rested. There is no mention of any servant resting כָּמוֹךָ "as you do" – nor is there any mention that we were servants in Egypt. In the second version – in V'Eschanon – there is no mention of God creating the world in six days and resting on the seventh. Instead, we are told

לְמַעַן יָנוּחַ עַבְדְּךָ וַאֲמָתֶךָ, כָּמוֹךָ...

"…that thy man-servant and thy maid-servant may rest as you do."

And:

וְזָכַרְתָּ, כִּי עֶבֶד הָיִיתָ בְּאֶרֶץ מִצְרַיִם,...

" And thou shalt remember that you were a servant in the land of Egypt,…"

In the first version we rest in contemplation of the mystery of the creation [119-A]. In the second, we rest in sympathy with God's liberation of the oppressed.

It isn't difficult to imagine what would happen if these two versions were observed by themselves. In the first case, we could see ourselves resting by going off to a cave to meditate on the nature of God and creation. While we were resting and contemplating these mysteries, the rest of the world would continue on its way to ruin. There would be no kindness to strangers, no help for the poor and no liberation of the oppressed.[119-B]

[119-A] On the limits of the contemplation of mysteries see: "Why the Torah begins with a ב …" & See Footnote 611B on the fundamental mystery of the ultimate nature of the most mundane things- like cold water.

[119-B] The example of R. Shimon bar Yochai & his son living in a cave for 13 years isn't undersood as a specific effort to go off & meditate in a cave. They were fleeing from the Romans who wanted to kill them.

In the second case we would rest by seeking to level society – to make everyone equal and force them all to the same position. We might become – as so many did among our well-intended forebears – Communists. Without the sense of humility before God that comes from contemplating the mystery of creation, we could easily – with the best of intentions -- fill the world with blood. The oppression that we sought to eradicate would remain -- or worsen. Again, there would be no kindness to strangers, no real help for the poor and no true liberation of the oppressed [119-C].

Shabbes in these two distinct versions – two versions that are really one – comes to teach us that we must unite these two qualities. We must combine the humility and patience that come from contemplating the mystery of the creation with a profound and active sympathy for the poor and oppressed.

Shabbes embodies that unity – joining forever the humility that comes from remembering the mitzvahs "Bein Adom l'makom" with the active concern for others that comes from guarding the mitzvahs "Bein Adom l'Chaveroh". It is the time and space to practice this unity which will be an essential feature of the Time to Come-[120-A,B,C].

A MARRIAGE OF THREE

THE BUSINESS GENIUS AS SHADCHAN

Shabbes – the marriage of two worlds-

is really a marriage of three – the Sabbath in its dual nature & the souls - the neshamas- of the Jews. If Jewish neshama's weren't well matched with the Sabbath - before long, they wouldn't keep it. So, God made a good shidduch – a good match or marriage -- when he gave Jews the Sabbath. It's such a good marriage that many say, ~"More than Jews have kept the Sabbath, the Sabbath has kept the Jews."[A]

This special Shidduch reminds us of what we say God's been doing after Creating the World: He creates shidduchim – not only like the match between Jews & the Sabbath but between men & women who'll become husband & wife. We learn that making such shidduchim is more difficult – for God – than the Splitting of the Sea.[B]

In Jewish life, there are two kinds of shadchanim – who facilitate this work of God in making good shidduchim. There's the type of person who's commonly understood by that word – the shadchan who helps to make matches between people who will marry. There's also another kind of shadchan: the person who makes good matches between people & the products & services they need.

This isn't only a matter of understanding people's needs & the products & services that might benefit them – but of bringing them together in a timely & effective way. This is the Art- the Creative Force – the Genius -- of Business. So, the essence of business is making shidduchim.[C]

Sometimes it's not just a matter of ordinary goods & services that are matched with buyers. It could be matching people of diverse abilities & needs with each other to work toward a common purpose. This purpose – the product or service produced by the group -- is then matched with others who'll buy it. So, the group & the buyers of their output all benefit.

Further, this group-made result may be something that never existed before – a new invention or creation that the shadchan – the Business Genius – understood would be of value – a good shidduch -- even before the people who'd value it had dreamt of its possibility.[D]

So, as Hashem has matched the Sabbath with the Jews, the Torah Centered Business Genius can help to match the Jews with the World. Their acute sensitivities to the realities of both people & the physical world make them the best shadchanim for this task: to help the Jews be a better model – a better & more effective "light to the nations" [Is.42:6] - to sell - by their example & their active teaching – the ways of God to all God's Creations.

INSPIRED BY THE EXAMPLE OF RABBI B.G. & FAMILY 7/31/16

A. אפשר לומר בלי שום הפרזה כי יותר משישראל שמרו את השבת שמרה השבת אותם.

LINK. "ASHER ZVI HIRSCH GINSBERG 1856 –1927), AHAD HA'AM- אחד העם, "*ONE OF THE PEOPLE*", GEN. 26:10. NON-RELIGIOUS, JEWISH, ZIONIST WRITER. AN EXAMPLE OF ~ "...LEARNING FROM EVERYONE" PERKEI AVOS 4:1, SEE FOOTNOTE 304-D,

B. REB YOCHANAN SAID, IT IS AS DIFFICULT TO MATCH COUPLES IN MARRIAGE AS SPLITTING THE SEA. SOTA 2A:
אמר ר' יוחנן וקשין לזווגן כקריעת ים סוף שנאמר (תהילים סח) אלהים מושיב יחידים ביתה מוציא אסירים בכושרות

C. THIS IS IN CONTRAST TO THOSE WHO SAY BUSINESS IS A MATTER OF BEING "HALF A GRAB" AHEAD OF THE COMPETITION, OR "BUSINESS IS A SWINDLE".

D. ALSO INSPIRED BY EDWIN LAND ['09/'91]WHO, WITH 500+ PATENTED INVENTIONS, FAMOUSLY SAID HIS MOST IMPORTANT INVENTION WAS CREATING AN ENVIRONMENT AT POLAROID WHERE SO MANY THOUSANDS OF PEOPLE COULD DO GOOD WORK & FEEL GOOD ABOUT WHAT THEY'RE DOING. HE ALSO SAID "THE BOTTOM LINE IS IN HEAVEN" 4/26/77

119-C On the need for Torah-centered limits in the practice of kindness & the potential for severe consequences without such limits, see also: **"The Dimensions of Wisdom"**, particularly, see footnote 562-B. On sensitivity to kindness see: **"The Color Of Kindness"** [added 1/28/16]

120-A This was the first d'var Torah that I said in shul at the request of a rabbi. Rabbi Israel (Azriel) Miller, Z"L, heard me saying part of it in the Kingsbridge Heights Jewish Center in the Bronx. He was so impressed by the part that he had heard that he asked me to say it over as the formal d'var Torah of seudah shlishis -- instead of the d'var Torah that he had prepared to give himself. He said my d'var Torah was beautiful.

120-B Rabbi Miller was, at the time, Aug. 15,' 92, Vice President of Yeshiva University and had served a term as the Chairman of the Conference of Presidents of Major American Jewish Organization. He was also President of the Conference on Jewish Material Claims Against Germany for two decades. I also said this d'var Torah some years later in the home of Rabbi Zevulon Charlop, who informed me of the ptera of Solomon Adler(27 Av,5754) from an obituary in the New York Times [see p 156-57 Notebook, 8/22/94]. [FOOTNOTE CONTINUES, NEXT PAGE]

120-C [FOOTNOTE CONT. FROM BOTTOM OF PREVIUOS PAGE] About 19 hrs before I said this d'var Torah, I had my teeth broken & damaged when I went out ~midnight to see if I could get some people to lower their car sound systems. It was a hot summer night and my mother, Z"L, had her three bedroom windows open – she never had air-conditioning – and could not sleep because of the noise [A]. When I got outside, I found four groups, each with their own car, lined up along the western side of Poe Park.

Three of the groups–mostly semi-drunk teen-agers having a nice time --listened to me. The 4th group wasn't semi-drunk teen agers – though I didn't recognize the difference at the time. With the 1st three groups, I remembered that it was Shabbes & didn't say explicitly that they should turn down their sound systems. I spoke to each group in a nice way & explained that they could go a few hundred meters away where they could have the same good time and their music would not disturb anybody.

With the 4th group, I actually spoke to them twice. The 1st time – before I'd spoken with the other 3 groups, they just ignored me. After I'd spoken with the others & had success, I came back to the 1st group – still not noticing that they weren't semi-drunk teenagers. After they gave me some back talk, I forgot momentarily to be careful what I was saying – because it was Shabbes – & told them explicitly that they should turn down their music. It was booming from a large, special built, sound system of ~600 watts, mounted in the hatch of their car. They just gave me more back talk.

Then I noticed that a police car was parked less than 100 yards away – just outside of a restaurant (Corky's, near SE corner 192nd & Grand Concourse). I went over to the police – who could clearly hear the music. I told them what had happened & they drove over to the car with the music. The music was turned off & the police drove away – leaving me standing in the street in plain sight of those who'd given me the back talk.

The three of them then came over to me – one carrying a 2 in. thick sawed-off table leg. They surrounded me & told me that I'd "committed a terrible sin" – I "spoke to the police." As one of them was standing in front of me talking, another one -- very strongly built -- went behind me &, without warning, punched me very hard in the left lower jaw. My yarmulke flew off & landed ~6ft away. I fell down on one knee but stood up immediately --- as though nothing had happened. Without saying anything or making a sound, I went and picked up my yarmulke, put it back on my head and walked away from them.

I walked toward a bench ~50 ft. away, where a man was sitting. I thought that the people who had just attacked me would not attack me further if I was sitting on the bench next to this man—a complete stranger to me. I sat down on the bench and the attackers got in their car and drove away. The man on the bench – who had witnessed the whole episode -- told me that those attackers were drug dealers from several miles away – 170th St. – and the music was their promotion – their "Good Humor" jingle. Somehow the police couldn't figure this out – or could they?

Though I would discover that my right eyetooth was broken off and other teeth were damaged, I experienced no pain and no bleeding. The broken part of the tooth – most of the front of the crown – remained attached by a small piece of gum for over a year. Had I not had a beard, the damage would have been greater. The blow had glanced off my jaw -- as a result of the lower friction between fist and beard than between fist and skin. It landed where my neck was protected by my shirt collar, producing a substantial friction burn. When I said the d'var Torah in shul about 19 hours later, I did not yet realize that my tooth was broken. I thought that it was only loose. Rabbi Miller knew nothing of these events when he asked me to speak. See p 135-138 Notebook 5, 1992. [#61, p.1 Notebook Version of Sefer Chidushei Torah] See also in this sefer: **Sound Space: Local pastures with Global Impacts**

[A] "…low frequencies [20-200 Hz] propagate with little attenuation through walls and windows…Sleep disturbance, especially with regard to time to fall asleep and tiredness in the morning, are commonly reported in case studies on low frequency noise." "Effects of low frequency noise on sleep", K. Persson Waye, Noise and Health, 2004, V. 6, #23 [p. 87-91]

For comparison, human hearing ususally covers the range from 20 Hz & 20,000 Hz. Middle C on the musical scale – the 4th C on the 88 key piano keyboard – has a frequency of 261.63 Hz, wavelenth =1.31m in air at 20°C, & speed of sound at 343 m/s.

SAPPHIRE TORAH

כְּעֶצֶם הַשָּׁמַיִם לָטֹהַר [121]

II GATEWAY TO CHEMISTRY, GEOCHEMISTRY AND MATERIALS SCIENCE

We learn that the tables of stone that the Torah was written on were made of sapphire.[122] If God could use any material in the world for these tables, why would sapphire be the choice? Why not diamond – which is more costly than sapphire

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[121] '…like the Heavens for purity' Ex. 24:10 – see full quote next page.

[122] **A.1** Midr. Tanchuna, Ex.32:19."R Judah said 'The tablets…were made of sapphire.'" Also, on Ex. 34:1,re 2nd tablets:"…the Holy One, blessed be He, told him[Moses]'Hew these two tablets …' He revealed to him the quarry of sapphire that was in his tent." From Midr. Tan.-Yelam, trans. by S.A.Berman,'95."The Luchos were made of sapphire"; see Tanch. (KiSisa 29, Eikev 9),Sifri (Beha'aloscha 101), Vayikra Rab(32:2),Rashi (Ex.34:1) found at:_____ **2.** [Torah doesn't actually say what kind of stone. See also Dt.27:8 'very plainly'; **3.** Josh 8:32: wrote on stones. Nothing in "Legends Of The Jews", L. Ginzberg, vol. 4, p 6, Johns Hopkins [reprint,1998] on what kind of stones-except that after reciting blessings & curses, "an altar was erected on Mount Eval with the stones, each weighing forty seïm which the Israelites had taken from the bed of the river while passing through the Jordan. The altar was plastered with lime, and the Torah written upon it in seventy languages so that the heathen nations might have the opportunity of learning the law." **4.** ["…topaz, chrysoberyl, corundum or sapphire, and diamond] …are not found in Egypt and there is neither evidence nor probability that they were used in ancient Egypt for any purpose, or even that they were known at all, until a very late period." P. 70, Ancient Egyptian Materials and Industries, A. Lucas, J. Harris, 2012 [but see #7] **5.** However it is likely Egyptians knew emery from Mesopotamia. It's also possible that they traded with China or India or found unusual deposits that incl. SiC &/or diamond microcrystals [see footnotes 135, 357-C & D **6.** Hammurabi code carved into a 2.25m high,1.65-1.9m girth, ~1 ton, black diorite pillar [Mohs hardness 6-7], ≥20k cuneiform characters- from ≥3700 yrs ago. _____ **7. a** Probably used corundum from SE Egypt desert – not emery from Naxos, Greece –"Emery is the intimate mechanical admixture of corundum and either magnetite or hematite." In Egypt,only known corundum is…at[Wadi] Hafafit... See map at right] There, coarse-grained corundum (2–6 cm in length) of various colours can be found in aluminous pegmatite….. Iron oxides are present, but in rare minute grains."[based on source **b,** infra]"Evidence For The Use Of Corundum Abrasive In Egypt From The Great Aten Temple At Amarna", The Amarna Project and Amarna Trust newsletter #14,'14,p2-4; Hidden Secrets of Ancient Egyptian Technology 5/22/'15;[FigB, black square sides=1mm, [artificial colors] yellow=corundum,blue=Si ,red=Ca] ,Anna Serotta & Federico Caro, Metroplitan Museum. of Art. Horizon _____ **b.** 'Formation of Corundum and Associated Mineral Zones In The Hybrid Ultramafic-Pegmatite Association of the Neoproterozoic Hafafit Core Complex, South-Eastern Desert, Egypt', Ore Geology Reviews, v.96, 5/'18,p72-97 A.H.Ahmed· M.E.Gharib;[Fig A. coin=25mm diam, dark grains are corundum] ; & **c.** "Ancient Egyptian Stone-Drilling-An Experimental Perspective on a Scholarly Disagreement"L. Gorelick & A.J. Gwinnett, *Expedition Mag.*. Penn Mus'm, '83, p40-7_____ _____ **d.** Someslabbed Naxos emery shows clear corundum zones separate from iron minerals: sample in Fig.C is 10cm long _____

B.. 1. It isn't clear that sapphire in Midrash is the mat'l that we know by that name today or that today's sapphire was the material of the luchos. **2.** Ibn Ezra cites Saadia Gaon as saying that לִבְנַת is related to white [as in 'and teeth white with milk - וּלְבֶן־שִׁנַּיִם מֵחָלָב: ' Gen 49:12 ASA] & sapphire was white, while I.E. himself says לִבְנַת means brick – not white & parallelism in Lam 4:7 indicates to I.E. that 'סַפִּיר' means greenish red. [What's greenish red? Separate colors or color-blind? Parallels in Lam 4:7 also strongly suggest white! ASA. ע"צ] These quotes taken mostly from p 210, 'The Commentators Bible,v.2, M. Carasik,ed. JPS,'05]] **3.** There's much more sapphire produced by processes dozens of km under the surface than is brought within reach of miners. See,e.g. fig.15 of 'Petroge esis of alkaline basalt hosted sapphire megacrysts..."L.C.Baldwin, et al____ Contrib Mineral Petro('17)172:43 _____ **4.a** '15-ton giant blue sapphire displayed in Hanoi, p 6 33rd IGC 10/13, Hanoi,Viet:photo, right _____ **b.**Photo, bottom, left: reportedly largest single crystal of corundum found so far – with same chemical formula & crystal structure of sapphire: 152kg, ~60cm long & 40 cm diam. – though it wasn't clear. _____**c.** 300 kg single crystal of pure sapphire for hitech aps. Photo, bottom, cntr. made by Monocrystal,Russia,2015,_____ **d. e.** "Origin of peraluminous minerals (corundum, spinel, and sapphirine) in…Tamil Nadu, India",Contrib Mineral Petrol (2017) 172:67 Shreya Karmakar,et al _____ ___ **f.** "Absolutely pure crystallised alumina [corundum] has no colour and is perfectly water-clear. It is then known as leuco-sapphire; it is, however, but rarely found in this condition, more usually showing a more or less pronounced colour…The two varieties which occur with the greatest frequency are red corundum, or ruby, and blue corundum, or sapphire, the latter being more abundant than the former."P.308 "The different colour-varieties of corundum occur as irregular grains and as well developed crystals embedded in the mother-rock, which, as a rule, is an old crystalline rock, such as granite or gneiss. The gem-varieties are found with especial frequency as secondary contact minerals, which have been developed in limestone by contact with a molten igneous rock. By the weathering and denudation of such rocks, the embedded crystals are set free, and are subsequently found with other water-worn debris in the beds of streams and rivers. It is in these derived deposits that the most beautiful specimens of the varieties mentioned above are found in all countries in which the original mother-rocks occur." P. 309 "Sometimes in the river alluvium [of the Moguk District in Burma where rubies were most found in the early 20th century] instead of clayey and sandy material, there are pure gem-sands consisting mainly of minute sparkling grains of ruby" P. 315 "The blue colour of the sapphire disappears on heating, hence it is possible to transform a patchy or pale-coloured stone into a leuco-sapphire, and at the same time greatly enhance its value." P. 326 "The appliances and tools which have been found in the [emerald] mines [of Egypt] date back to the time of Sesostris (1650 B.C.)." P. 355 Edelsteinkunde, [Precious Stones], Max Bauer, 1896, Engl. Transl. & updated, 1904, 700+p [Internet Archive _____ **g.** The Mineralogical Identification of the Biblical Sapphire (Pl. ט) / הזהות המינרלוגית של אבן הספיר המקראית(pp. 83-85). דב גינזבורג D. Ginzburg. 1983 _____ **5. a** Diamond & emery were both used in ancient times for polishing & working hard stone: see e.g.____ et al,'The Earliest Use of Corundum and Diamond in Prehistoric China', Archaeometry v.47, #1, 25/2/'05; **b** Emery blocks identified as shammu-[šammu] stone in Akkadian [possibly related to story of worm 'shamir' שמיר- that could cut anything- ASA, in Tenach Jer. 17:1 [stylus point; Ez 3:9[Harder than flint]Zc 7:12,etc, Is 7:24: Also means thorn –very early cutting/writing tool for leather, clay, wax, etc.]W.Heimpel, L.ick & A. Gwinnett,1988, 'Philological & Archaeological evidence for the use of emery in the Bronze Age Near East", *J.of Cuneiform Studies*,40,195–210 _____ **c** An Akkadian Lexical Companion For Biblical Hebrew, Hayim Tawil, '09 **d** Shamir is mentioned in Avos 5.6 & Psachim 54a created bein hashmoshes of 6th day with writing, stylus & stones of the 'luchos'. It's discussed at length at Sotah 48b & in terms of pshat, halacha & hashkofa in 'The Rambam, the Shamir and Cutting Stones for the Temple' by R. Moshe Shamah, Dir. Sephardic Center, Bklyn, NY,'10. He notes "in codifying the laws of engraving the stones (*MT Laws of Temple Vessels* 9:7), the Rambam does not mention the *shamir*."_____ **e** Because of its rarity & high value in cutting signet rings & the like & perhaps to reduce counterfeiting, it may've been kept secret & over time evolved in the public mind into the mysterious Shamir worm. **f** "Emery abrasive in the lapidary craft of the Ur III Period? Some further remarks on the stone ú-na4-gug and its Old Babylonian counterpart" Aula Orientalis,33,p.141ff, by Dr. Krisztián Simkó ___ _____ who noted smuris σμυρις is emory in Greek. **g.** It's interesting that 'sapphire' in Hebrew: סַפִּיר is said to have the root סָפַר – which in turn is the root of words for 'count', 'relate or say', 'cut' or 'book'. 1st use is "This is the book of the generations of Adam… זֶה סֵפֶר תּוֹלְדֹת אָדָם: בְּיוֹם בְּרֹא אֱלֹהִים אָדָם בִּדְמוּת אֱלֹהִים עָשָׂה אֹתוֹ: " Gen 1:5. The letter somech – ס- as a word - סָמַךְ - means to sustain or support- It's shape suggests something that enraps or contains. Heavy blanket or cloak is שְׂמִיכָה [Jud4:18] But Biblia Hebraica Stuttgartensia shows 2 mss with סְמִיכָה & BDBGes shows root is סָמַךְ. Means 'thick'/ Chul 55b1,c.1 Schot. Check further]. Letter pe- פ -as a word– פֶּה- means 'mouth' & depicts a mouth. Letter resh- ר-as word רֹאשׁ means 'head' & may've depicted a head. 3 letter combo= something that enraps, contains or preserves something that connects mouth & head: maybe numbers or words. Combo: 'something that holds words – book, way to write, implement for writing. Mat'l for inscribing durably on almost anything is corundum-sapphire.[See footnote 14-C] **6.a** Some say סַפִּיר in Torah=Lapis Lazuli, an opaque, non-uniform, blue stone- range of blues: dark, post-sunset sky, incl. star-like specks of pyrite– to lighter blues with patches of white, like daytime sky with clouds. No other stone is so sky-like–place above earth so much identified with ultimate heights & ends –so much identified with God. Like a piece of Heaven embodied in stone. It's more like techeles & blue tachash hides that covered much of mishkan –incl. Aron Kodesh- in transit. Unlike sapphire & like most of Mishkan, it can be scratched by common rocks & destroyed by fire or acids. Its deep blue[fig.E,below right] makes carved letters far more visible than with a clear mat'l. **b.i** Chazal say luchos-לֻחוֹת were 6x6x3 tef., ea.[see BB14a, Bam. Rab. 4:21; but in Baraita di-Melechet ha-Mishkan, ch.6, R. Yehuda b. Ilai says 6X3 tef., no thickness given & 2 sets were in ark:broken& whole. BB14b, YT(Shek. 6:1;16a-b;Sot. 8:3. AtTaanis4:5[luchos: 6X3tef.;no thickness stated-in Moshe's hand at one end- God's right hand holding other end –not in aron]Schottenst.26a[3] discusses this: Tosfos to Men. 99a[3] says 6 tef. width in BB14a refers to 2 tablets side by side.] This suggests thickness of tablets alone ≤1/2 tef. **b.ii** Abarbanel, " פירוש אברבנאל על התורה-שמות " Sh.32:15: ~"Tablets were thin, like those which learned men write on… Thick ones wouldn't have broken." "כי היו הלוחות דקות מאד כדמות הלוחות שיכתבו בהם אנשים המלומדים לכתיבה "ואלו היו עבות לא היו נשברות לשעתם [_____pdf123/143,c2,line4&10,1862, Warsaw _____] **b.iii** ASA: Both sets were put in aron in acacia wood Protective Frames-- 3 tef. deep –to hold upright; spread wt; hold broken ones together & prevent scraping Au or each other; prevent hand contact. **b.iv** 2 sets of lapis laz. luchos in aron; ea. 3cm[.3tef.]thick; 4stones=4x6x3x.3x2.5kg/l=54kg[27kg/set];wood frames 2cm thick:18x 3x.2x4x .8kg/l=34.6kg-[overlap & round edges 6kg]=29kg;∑= 83 kg for 2 sets. **b.v** I. Like aron, table & incense altar – wood+Au.[see RINGS OF GOLD, p55] **c.1** 'Luchos'= board-like objects-not blocks: Cu altar's 'hollow boards- נְבוּב לֻחוֹת' Ex.27:8;"...& if she *be* a door, we will inclose her with boards of cedar. ":Songs 8:9; "...write it before them on a tablet, and inscribe it in a book… כָּתְבָהּ עַל־לוּחַ אִתָּם וְעַל־סֵפֶר חֻקָּהּ…" Is.30:8 **c.2** This meaning is strongly supported by Ugaritic lḫ "writing board", "plank of wood", etc., also cheek, jawbone–[perhaps early, durable, portable, carvable writing surface-like "oracle bones" before wood boards-ASA.] p.490,v.2, Dict. of Ugaritic, see footnote 213B . **c.3** also stongly supported by Akkadian [supra,5.c,Tawil,p.187] **c.4** Word transl. as 'sides' in describing writing: עִבְרֵיהֶם , used mostly for 2 sides of a river or inside [Ex 28:26 re ephod] & outside. For sides of objects in Mishkan, incl. aron[Ex.25:12] tabernacle[Ex.26:20],Cu altar,[Ex.27:7]root is:צֵלָע or for menorah[25:32] & Au altar צֵד, so 2 tablets are referred to & 2 col's on each inscribed side, 4 col. in all? **d.** "[If]…temp…is raised too high…[it]…is…decolourised…hardness …[~]5½… [sp. gr.:] 2.38 … 2.42…,decomposed by [HCl]…[with]…a strong smell…like… rotten eggs. [Its melt is]…clear, bubbly glass. [It's]…a mixture of several substances." pdf p503;"Pliny compared the stone to the star-be-decked firmament; and the shining metallic flecks of iron pyrites do contrast…with the dark blue background..." pdf p.509 Haüynite…[is]one of the coloured constituents of lapis lazuli… sometimes of a beautiful blue colour, and…transparent;…its hardness is 5.5 and its specific gravity 2.4 [Lazurite, the primary constituent of lapis lazuli, is a sulfide-rich variety of Haüynite].[from Bauer, see 4.f, supra] **e.** [Theophrastus [371-~287 BCE, student of Plato 428-423?-~347 BCE & Aristotle; succeeded Arist., 36 yrs as head of his school]'On Stones, Intro.,Greek Text, Engl. Transl., and Commentary",E.R.Caley, J.F.C.Richards,'56] _____ p136 "It is certain that the *σάπφειρος* or *sapphirus* of the ancients was not the…gem…sapphire. Theophrastus …by comparing it with the *kyanos* implies that it was dark blue in color…[He adds, in] section 23 that *sappheiros* seems to be spotted with gold… which can only apply to dark-blue lapis lazuli [with]…specks of iron pyrites."; p 126 "…*kyanos* was also a variety of lapis lazuli… in which iron pyrites were not present in noticeable proportion." **f** J.N.Ford,'08,'The Ugaritic Letter RS 18.038 (KTU2 2.39) and the Meaning of the Term *spr* "lapis lazuli"' (=BH סַפִּיר-lapis lazuli). UF 40, 277-338.[p302-] Assoc. with tahor- טָהֹר & material for divine throne Ez 1:26 in Ugaritic & Akkadian. **g** "New Thoughts on the Trade of Lapis Lazuli In The Ancient Near East, C. 3000 – 2000 B.C." K.M.Ajango, '10, BS thesis, U Wisc. Shows lapis sea trade Indus Valley to Mesop. ≥4000BP **h** סַפִּיר isn't in Akilas but is *σάπφειρος* in targum shivim. **i** "Rough blocks of lapis with fine color from Afghanistan are known up to 100 kg… The International Gem Society (IGS) _____Minerals in Afghanistan' Lapis…in Badakhshan…occurs as skarn lenses 1–4 m thick in marble.' _____ **j** Related sphere & spirit – both relating to heavens & their color? Like techeles: tachlis:ultimate end- heavens – 'The sky's the limit.' **k.** Hebrew Gemstones in the Old Testament: A Lexical, Geological and Archaeological Analysis.J.E.Harrell, J.K. Hoffmeier&K.F.Williams,Bulletin for Biblical Res.27.1 '17,1–52, p18-20 Lapis Laz. **7. Bech. 44a** "Shimi bar Chiya said to Rav[175–247CE](his grandfather)'You've made…[Moshe]a bal mum.'"-his height=10X length of his 'ama';arms too short! This is a joke, like Moshe was 10 amos tall, as ladder would be interposition between feet & ground-[Pardes Yosef (to Shem 40:19)_____][but Leviim set up mishkan – not Cohanim] or ladder not mentioned-like other tools. Let his arms stretch - like Pharoah's daughter[Mid.Rab on Ex 2:5]. Luchos 40 saw[~.5ton] &1 ton krashim-no problem if Moshe & Leviim 10 amos tall. See footnote 204 on krashim & 608-B on deep insight hidden in story of giga-ton re'em. "Rabbah before he began [his discourse] before the scholars used to say something humorous, & the scholars were cheered…." T.Bav.Shab 30b _____ Where are these thousands of humorous comments? Ibn Ezra:Og's 9x4 ama bed [Dt 3:11]shows he was ~2x ht of normal person, not 6-9 amos ht by Og's forearm, then he wouldn't look human. Also Rambam, Moreh Nev.2.47,[p248, M. Friedlander trans.,1904]. 'Was Og Just a Tall Story? 'Dr. A.Kosman, Naftal-Yaffe Dept. of Talm.,BIU_____ _____**8.** Also see footnote 215-B on Mizbe-ach HaNechoshes – Cu Altar – & 3-way machlokes on its dimensions: Derech Ha Teva vs. Open Nisim:2 trends of thought – R Yose says fire comes down from heaven_____ [as Rashi explains]–so the size doesn't matter?

and very much harder? Diamond can easily scratch sapphire but sapphire can't scratch diamond.

It turns out that, compared to sapphire, diamond has one highly visible shortcoming and three less obvious weaknesses that make sapphire look like the better pick. The obvious shortcoming is that diamond disperses the different colors of light about two and a half times as much as sapphire[123]. Almost anything written on diamond would be so fringed with rainbow colors that it would be difficult to read.

The first of the less visible weaknesses is that diamond burns[124]. It combines with oxygen to form a gas, carbon dioxide, a waste product of human metabolism. Sapphire raised to much higher temperatures does not burn.

The second less obvious weakness is diamond turns to graphite when it's used to cut iron. Iron is the material symbol of war – the material of choice for swords and chariots. It's notably absent from the Mishkan – the Dwelling Place of God[125]. When diamond is used to cut iron it's transformed without burning from something clear and hard to something black and soft. When sapphire is used to cut iron, it retains its fundamental character and gets the job done.

The third less obvious weakness is diamond is made of one elemental material – carbon. Sapphire is made of two elemental materials and thus has an intrinsic duality that is more appropriate to the Torah. Torah – as we will see – has a dual character that is nonetheless a unity.

The two elemental materials that sapphire is made of are oxygen and aluminum. The first is an essential element of the air that we breathe – essential for human life. The second is one of the most common elements of the ground we walk on, making up a large – but hidden -- part of most clays and rocks. The two elements might be considered symbolic of Shamayim and Aretz – Heaven and Earth -- and of the mitzvas bein Adam leMakom – between Man and God -- & bein Adam leChaveiro – between Man & Man.

Before we look more deeply at this symbolism, let's take a closer look at the physical properties of sapphire. First it's extremely hard. Nothing that's clear and naturally found on earth is harder than sapphire except diamond[126]. Sapphire is also <u>extremely</u> clear – not only in the visible parts of the spectrum but also, like the sky – shomayim - in the ultraviolet and the infra-red. This is what we'd expect, since we read:

וַיִּרְאוּ, אֵת אֱלֹהֵי יִשְׂרָאֵל; וְתַחַת רַגְלָיו כְּמַעֲשֵׂה לִבְנַת הַסַּפִּיר, וּכְעֶצֶם הַשָּׁמַיִם לָטֹהַר.

…like of a paved work of sapphire stone, and the like of the very heaven for clearness[127]. SHEMOS 24:10

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123 See table, 3 p. forward, with refractive index data in blue and red.

124 'In a stream of oxygen gas, a crystal of diamond begins to burn at a low red-heat.[525-700°C]It will then gradually rise in temperature until it reaches a white heat and will then burn uninterruptedly with a pale blue flame, even after the source of heat, such as a gas flame, applied at first for the purpose of raising the temperature to the point of combustion, has been removed.'<u>Precious Stones</u>, Max Bauer,p115, [see footnote 122B.7.h]

125 A.1 "[D]iamond..is not suitable for machining pure iron or ferrous alloys…due to rapid tool wear. [It]… wears out 10^4 times faster during machining mild steel than brass, where hardness of both workpieces are in the same range.[pdf p.21-2]…diamond initially graphitizes and subsequently reacts with iron to form iron carbide…"[pdf p.213] <u>Investigation on The Mechanism of Wear of Single Crystal Diamond Tool In Nanometric Cutting of Iron</u>, PhD '09, Okl.St.U., R.Narulkar. *[Also in: Computational Materials Sci*,45.2 ('09):358-66._____A.2 '…[Al_2O_3-Sapph]cutting tools are most successful in high-speed turning of cast iron and steel' P.566, <u>Fundamentals of Modern Manufacturing:Materials, Processes, and Systems</u>,4thed.,M.P.Groover,'10,Wiley. A.3 Interestingly, diamond's thermal conductivity is ~60X sapphire's. It's the 'coldest' natural substance. Ice is slang for diamond. There's no tradition the Luchos were cold to the touch. B. Using iron is forbidden & is contrasted with the whole (peace) stones of which the altar would be made: Deut. 27:5-6._____ ____

וּבָנִיתָ שָּׁם מִזְבֵּחַ לַי־הוָ֖ה אֱלֹהֶ֑יךָ מִזְבַּ֥ח אֲבָנִ֖ים לֹא תָנִ֣יף עֲלֵיהֶ֔ם בַּרְזֶ֑ל אַבְנִ֣ים שְׁלֵמ֔וֹת תִּבְנֶ֖ה, אֶת-מִזְבַּ֣ח יְהוָ֔ה אֱלֹהֶֽיךָ; וְהַעֲלִיתָ֥ עָלָ֖יו עוֹלֹ֑ת, לַיהוָ֖ה אֱלֹהֶֽיךָ.

…You shall not wield any iron upon them. Of whole stones shall you build…

Even sounds of iron tools were excluded when the Temple was built.I K 6:7

וְהַבַּ֗יִת, בְּהִבָּנֹתוֹ--אֶ֫בֶן-שְׁלֵמָ֥ה מְסֻ֑עַ, נִבְנָ֣ה; וּמַקָּבוֹת֩ וְהַגַּרְזֶ֨ן כָּל-כְּלִי בַרְזֶ֜ל, לֹא-נִשְׁמַ֤ע בַּבַּ֙יִת֙ בְּהִבָּנֹתוֹ.

'For the house, when it was in building, was built of stone made ready at the quarry; and there was neither hammer nor axe nor any tool of iron heard in the house, while it was in building.'

Mishn:Midos3:4:"They did not plaster them [altar stones] with an iron trowel lest it should touch[the stones]and render[them] impure for iron was created to shorten man's days, while the altar was created to lengthen man's days; what shortens[life] may not rightly be lifted up against what lengthens [life]."

126 Clear silicon carbide (moissanite) may be harder than Al_2O_3 but has only been found in nature as microcrystals. Silicon nitride – nierite- is harder than Al_2O_3 but has only been found as microcrystals in meteorites. Lonsdaleite is a form of carbon crystal that theoretically may even be much harder than diamond. Samples found so far –in meteorites -aren't as hard as Al_2O_3, are transparent but not clear & <1mm in their largest dimension. Cubic & wurtzite boron nitrides are both harder than Al_2O_3 but haven't been found in nature. Tungsten carbide & boron carbide are harder than Al_2O_3 but not clear. There's a whole field now of "super hard" synthetic materials, incl. heterodiamond & nanotubes that are made for various technical applications or scientific investigations. They haven't been found in nature. See table, p42, for detailed properties of mat'ls discussed here.

127 [Note 'clearness' in this transl. & 'purity' in translation on p 38] Some say sapphire is the color of the sky & since the sky is blue, sapphire should be blue. However, if we compare the amount of sky sunlight must pass through – ≥10km – before it scatters enough light to make the sky appear blue - sapphire luchos would have to be ~10X thicker than the actual luchos before it appeared even pale blue to the eye. [see footnote 302]

The blue color of the sky is primarliy due to Rayleigh scattering – a phenomenon in which the shortest wavelenths of light – at the blue end of the spectrum – are scattered ~10X more than the deepest red light. More precisely, the amount of scattering is inversely proportional to the 4th power of the wavelength. For air, ~1.2% of the light is scattered for every km of ordinary clear air the light passes through.A This is for light with a wavelength of 0.55µ. A µ is 1 millionth of a meter. This is the yellowish green light in the middle of the visible spectrum our eyes are most sensitive to. For typical – but not extreme -- blue light of 0.45µ, ~2.2X this would be scattered. For a typical red light of ~0.65µ, half as much would be scattered. The corresponding numbers for pure, single crystal, optical grade sapphire range from 0.56-1.82%/meter for the 0.55µ light.B With the atmosphere the equivalent of ~8.4 km thickness of normal airC & the path of light from the blue sky closer to 12km, we'd have to have luchos close to 8 m thick before it would appear to have the color of the sky.

The moon looks white -& one of its names: לבנה means *white* – as it's seen most of the time– day& night. The Torah actually says 'clearness', not 'blue.'

A. This is based on two sources: "Tables of the Refractive Index for Standard Air and the Rayleigh Scattering Coefficients for the Spectral Region between 0.2 and 20µ and Their Application to Atmospheric Optics," Rudolf Pendorf, J. of the Optical Soc. of Am., v. 47, #2, 2/57, p.176-82_____& "New determination of Rayleigh scattering in the terrestrial atmosphere" C. Frohlich & Glenn E. Shaw, 1 June 1980 / V. 19, #11 / Applied Optics, p. 1773-5. _____

B. Based on 2 repts: Study of Growth defects in Sapphire by Laser Rayleigh Scattering Imagining[sic], Zewu Yan et al, LIGO-T040077-00-R; _____ citing, B. Chu, Laser Light Scattering Academic Press, NY, 1974

C. Sea level air pressure at standard temp=1.03kg/cm² & avg. density of air =1.225kg/m³, the pressure can be said to be produced by column of air of uniform density that= 1.03/1.225m³/ cm² or 8.4km high.

It's twice as stiff as steel and only half as dense. It's extremely resistant to the effects of most acids and other corrosive chemicals and maintains these properties even to extremely high temperatures. If it were buried in the ground for a million years it would probably look just the same as when it was buried [128]. Still, if it's put into the human body, the body doesn't reject it.

The union two seemingly simple but very different elements – oxygen and aluminum -- to produce this extremely strong, clear material, suggests what's expected of us: That we should combine the two kinds of mitzvahs that were written on the two tables of sapphire stone.[129] We must unite qualities of bein Adam le Makom with bein Adam le Chaveiro in every mitzvah.

When we do a mitzvah that directly involves our fellow human beings we have the potential to create a Kiddush Hashem and to bring people closer to God. When we do a mitzvah bein Adam leMakom, we also have the potential to have a direct effect on our fellow human beings. Our actions can lead people away from Avodah Zarra – idol worship. We can bring them closer to the derech Hashem and all of the mitzvos bein Adam leCheveiro that the derech Hashem entails. In a more practical and immediate sense: ~"The kashrus of matzos isn't completed by observing all elaborations in laws of Pesach alone, but also requires meticulous observance of laws of behavior toward other people." [130]

When we combine mitzvahs bein Adam l'Makom and bein Adam l'Chaveiro in this way we'll create a Torah environment that, like sapphire, is extremely strong and clear. It will resist effects of an often hostile environment that would bend it out of shape, or erode it down to nothing. It will even resist those forces that would turn it into its opposite – as iron – the symbol of war - can turn diamond into graphite. It will maintain its integrity even at high temperatures – in times of passion, war, famine and social stresses of all kinds. With all this, it will be lightweight – not a heavy burden – to those who carry it. Planted firmly within us – in our body and soul – we'll find it's welcome to stay forever[131].

Π With all of this, we might ask: Why are sapphire & diamond so different? Where do they come from & how are they formed? What controls the hardness, strength & optical properties of a material? Why can we see through some materials – like sapphire & water – & not others --- like gold, wood, common stones -- or the human body? Can we make new materials that don't occur naturally on earth? So we say: "Come and learn." And we go through the sapphire gate to the study of chemistry, geochemistry and materials science. We can start with the table of properties of materials we've mentioned thus far *[see next page].*

***See also in this sefer*:**

FROM THE COPPER SNAKE TO THE TREE OF LIFE Π GATEWAY TO ARCHEOLOGY; RINGS OF GOLD Π GATE-WAY TO METALLURGY & PRACTICAL MECHANICS; SEEING WHAT SEEMS MISSING Π GATEWAY TO COL-OR SCIENCE AND PSYCHOPHYSICS; HOW DID THE GENERATION OF THE MABUL GET SO BAD? & HOW DID THE PEOPLE OF S'DOM GET SO BAD SO QUICKLY?

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[128] עֲנִיָּה סוּעָרָה, לֹא נֻחָמָה; הִנֵּה אֲנֹכִי מַרְבִּיץ בַּפּוּךְ אֲבָנַיִךְ וִיסַדְתִּיךְ בַּסַּפִּירִים.

O thou afflicted, tossed with tempest, and not comforted, behold, I will set thy stones in fair colours, and lay thy foundations with sapphires. Is. 54:11. [Haphtorah Re'eh]

[129] In the Midrash, cited above, the sapphire stone tables on which the Torah was written could be rolled up. A sapphire sheet 1/100th inch thick (0.25 mm) could be rolled up without breaking. In ancient times people were well aware that very solid, strong materials could be made into thin wires or even threads. Fine gold thread and extremely thin gold sheets were well known. Glass fibers may have been observed as well. There is also a Midrash about gates of Sapphire. Relate to haftorah for parshas Re'eh in Dvorim, Is 54:11, foundations of sapphires – these are the luchos.

[130] R. Yisroel Lipkin Salanter, 1810-83, get primary source, also *"Your sense of efficiency, together with the unacceptable demands placed upon your workers, shows that their blood is mixed into the food produced in this bakery"* found at:

[131] The part of this chidush about combining the two types of mitzvahs was thought of on Shabbes Parshas Ekev, 5769, after I was invited to be the guest of 3 men who were visiting a sick person – Boruch Yisroel Moshe ben Leibe Rela, Z"TsL, at Montefiore Hospital in the Bronx. The following Sunday evening, I met two others who were visiting the same person. When I related to them what I've written above, one of them said Reb Moshe Feinstein made a comment along the same lines. Reb Moshe noted that the word luchos is written without a vov – where it appears twice in Shemos 32:15 -- when they're made the 1st ime; & twice in 34:1 when they had to be made over again.

וַיִּפֶן וַיֵּרֶד מֹשֶׁה, מִן-הָהָר, וּשְׁנֵי לֻחֹת הָעֵדֻת, בְּיָדוֹ: לֻחֹת, כְּתֻבִים מִשְּׁנֵי עֶבְרֵיהֶם--מִזֶּה וּמִזֶּה, הֵם כְּתֻבִים.

וַיֹּאמֶר יְהוָה אֶל-מֹשֶׁה, פְּסָל-לְךָ שְׁנֵי-לֻחֹת אֲבָנִים כָּרִאשֹׁנִים וְכָתַבְתִּי, עַל-הַלֻּחֹת, אֶת-הַדְּבָרִים, אֲשֶׁר הָיוּ עַל-הַלֻּחֹת הָרִאשֹׁנִים אֲשֶׁר שִׁבַּרְתָּ

He said that, without the vov, the word can be read as lachas – in the singular, 1 table, not 2 -- & that this implies the unity of the 2 types of mitzvahs–even though they appeared to be written on 2 separate stones.

[These chidushim were originally entered as #'s98 & 18 – not yet entered into notebook.]

LAPIS LAZULI, SAPPHIRE, DIAMOND, GOLD, ACACIA AND OTHER SPECIAL MATERIALS

MATERIAL	HARDNESS (MOH'S)	YOUNG'S MODULUS 10E6 PSI	DENSITY GRAMS PER CC	REFRACT. INDEX,[132] BLUE .40μ	REFRACT. INDEX, RED .70μ	BLUE MINUS RED	CHEMICAL FORMULA	MELTING POINT C	OXIDATION TEMP. C[133]	OCCURRENCE
SAPPHIRE	9	63[134]	3.98	1.7865	1.7632	.0233	Al_2O_3	2040	Non- combustible	natural
DIAMOND	10	150+	3.51	2.464	2.406	.058	C	3550 S	~600	natural
GRAPHITE	0.5	3.7	2.1	opaque	opaque	opaque	C	3675 S	~650	natural
SILICON CARBIDE/ MOISSANITE [135]	9-9.5	65	3.21	2.765[136]	2.6206	.144	SiC: 6H	2730 Decomposes	1050-1200	microcrystals in nature, synthetic
SILICON NITRIDE	9	42	3.44	2.073	2.003	.070	Si_3N_4	1850 DISSOC.	<600	Synth; meteorite microcrystals,
SILICON	7	26.8	2.33	opaque	opaque	opaque	Si	1414	700+	natural
BORON NITRIDE	9.7	96	3.48		2.117[137]		cBN	2973 S	900+	synthetic
BORON	9.3	58	2.35	opaque	opaque	opaque	B	2300	<580	natural
TUNGSTEN CARBIDE	9	94	15.8	opaque	opaque	opaque	cWC	2870	500-600	synthetic
TUNGSTEN	7.5	60	19.25	opaque	opaque	opaque	W	3407	400-500	natural
BORON CARBIDE	9.5	65-68	2.52	opaque	opaque	opaque	B_4C	2350	400-500	synthetic
QUARTZ CRYSTAL	7	14.1	2.65	1.558	1.541	.017	SiO_2	1710	Non-combustible	natural
FUSED QUARTZ	5.3-6.5	10.4	2.2	1.470	1.455	.015	SiO_2	1665 SOF	Non- combustible	natural
CROWN GLASS SCHOTT N-BK-7	6	11.9	2.5	1.531	1.513	.018	BORO-SILICATE	557 GLASS TRANS	Non- combustible	SYNTHETIC, GLASS IS ALSO FOUND IN NATURE
FLINT GLASS SCHOTT F-2	~6	8.3	3.6	1.652	1.612	.040	CONTAINS LEAD OXIDES	434 GLASS TRANS	Non- combustible	SYNTHETIC, GLASS IS ALSO FOUND IN NATURE
PLEXIGLAS/ ACRYLIC/PMMA	~3	0.45	1.2	1.513	1.487	.026	$C_5H_8O_2$	160	460	SYNTHETIC POLYMER
GOLD, PURE	2.5	11.3	19.3	opaque	opaque	opaque	Au	1065	note[138]	natural
PLATINUM, PURE	3.5	~24	21.45	opaque	opaque	opaque	Pt	1768	complex	natural
IRIDIUM, PURE	6.5	77	22.65	opaque	opaque	opaque	Ir	2446		natural
SILVER, PURE	2.5	12.0	10.5	opaque	opaque	opaque	Ag	961	tarnishes	natural
IRON, PURE	4[139]	30	7.874	opaque	opaque	opaque	Fe	1535	<Room temp.	natural
ALUMINUM, PURE	2.5	10	2.7	opaque	opaque	opaque	Al	660	<Room temp.	METALLIC FORM *N.F.I.N*
MERCURY	Liquid	N.A.	13.5	opaque silvery liquid			Hg	−38.83	DISSOLVES Au,Ag &Sn	natural
WATER	Liquid		1	1.339	1.331	.008	H_2O	0		
WATER-ICE			0.917	1.3194	1.3069	.0125	H_2O	0		At -7°C
COPPER, 99% PURE	3.0[140]	17	8.94	opaque	opaque	opaque	Cu	1085	<Room temp.	natural
LEAD, PURE	1.5	2.3	11.34	opaque	opaque	opaque	Pb	327	<Room temp.	natural
TIN, METALIC 99%	1.5	7.3	7.4	opaque	opaque	opaque	Sn	232	<Room temp.	METALLIC FORM *N.F.I.N*
LAPIS LAZULI	5.0-5.5	brittle 2.38-2.94 [141-A]		Opaque – deep blue-~1.6			$Na_6Ca_2Al_6Si_6O_{24}S_2$ [141-B]	825, 1079[142]	825,Partial decomp.	NATURAL MIXED MINERAL
CARBON NANOTUBE	ULTRA HARD LENGTHWISE, VERY SOFT RADIALLY	140+ LENGTHWISE	1.3-1.4	opaque	opaque	opaque	CNT	1100+	Unstable above 750 in air	SYNTHETIC [RAPIDLY INCREASING KNOWLEDGE]
FINGER NAIL ALPHA-KERATIN	2.5									NATURAL PROTEIN
CYPRESS Semp.[143-A]		~2 LENGTHWISE	.45-.65	opaque	opaque	opaque	NOT APPLICABLE		350-ignition	natural
ACACIA nilotica[143-B]		"	.78-1.17	opaque	opaque	opaque	[MOSTLY CELLULOSE			natural
TEAK[143-C]		"	.62	opaque	opaque	opaque	$(C_6H_{10}O_5)_n$]			natural

Abbreviations in Table :N.A. Not Applicable; N.F.I.N.: Not Found In Nature; S: sublimes; SOF: Softening

[132] Most refractive Index data is calculated by wavelength at RefractiveIndex.INFO. Where the material is birefringent – as is sapphire -- the refractive indices for the "ordinary ray" are given here. The source for the refractive index of ordinary ray of sapphire at 0.4 microns is _____

[133] A. Though sapphire is non-combustible, it reacts with hydrofluoric acid at ≥300° C. Hot concentrated hydrofluoric acid may be found in presence of active volcanoes. Quartz reacts with hydrofluoric acid at room temp. B. Corundum or emery are sapphire in sand or powder form & are very useful in cutting & polishing hard matls. Akkadian 'shammu' has been identified as emery: p82 Ancient Mesopotamian materials & Industries PRS Moorey 1994 , citing Heimpel et al 1988[Source of Shamir worm story?ASA] [See footnote 122 B.5 b]

[134] Young's mod. of sapphire – & some other properties -- depend on crystal axis 63E6 psi is along c axis. Range is 50-63, depending on axis. Some other matls listed also have properties depending on crystal orientation. Diamond is more uniform with regard to crystal orientation than sapphire.

[135] Also found in: A. meteorites: "Nucleosynthetic Os Isotopic Anomalies In Carbonaceous Chondrites" T. Yokoyama___ et al, Lunar and Planetary Science 38,'07 . B. diamond pipes, volcanic breccia: "Natural α-Silicon Carbide" J. Bauer, etal, American Mineralogist, *V. 48, p. 620-64, '63* _____ & C. "Discovery of the Earliest Synthetic Carborundum (SiC) in Neolithic Jade Artifacts in Eastern China".Su-Jung Chou, *C. H. Lo* loch@ntu.edu.tw , et al, Terrestrial, Atmospheric & Oceanic Sciences. 8/'14, V. 25 # 4, p537-44. [SiC made from rice husks at relatively low temp]

[136] Strong absorption below 0.425 microns

[137] Refractive index at 0.5893 microns. Get additional data

[138] Gold oxides are less stable than the pure gold –thus, gold is found in its pure form in nature.

[139] This is for pure iron. The hardness of steel – in modern steel knives, for example -- may be ~7

[140] Hammered pure Cu can be up to 3.75 in hardness. Bronze, an alloy of Cu & tin, can be up to 4.0. A Cu saw with a quartz sand slurry in oil or water can cut through granite. Using powdered emery – which is impure form of sapphire with similar hardness, it could easily cut through almost anything.

[141] A. Density 2.38-2.42 [Bauer, see footnote 122.7.c]& 2.45-2.94, 500+ samples:Anderson & Payne,Nature,10/20/'34,p.627_____B. lazurite only,deep blue, source of primary color of Lap Laz.;+Pyrite:FeS_2, gold color, source of star-like speks ;+Calcite:$CaCO_3$,clear crystal, white when microcrystaline—main constituent of limestone – source of white 'clouds' found in Lapis Lazuli.

[142] 825=Calcite [$CCaO_3$] component decomposes; 1079= sodalite component. "Thermal Analyses of Sodalite…" M. Antao, The Canadian Mineralogist, V.40, p.163-72, '02.

[143-A,B,C] A. Noah's Ark wood [see footnote 710]; B. Mishkan Wood. Good sites: h=15-25m, circ.=2.4-3.0m.; very clear bole ht. ≤5-6.5 m; difficult sites, ≤10m. & clean bole≤3-4m.; 1.17g/cm^3 from: "Role of Acacia Species in the Rural Economy of Dry Africa and the Near East", G.E.Wickens, et al FAO, '95 Different g/cm^3, Y. mod. & hardness, [latter 2 somewhat prop to density] apply to different subspecies, growing conditions & position in tree.: "Acacia nilotica ssp. Adstringens…has… heartwood…[0.945g/cm^3 &… sapwood…[0.827g/cm^3]… resistant to water and termites."pdf 21, "Its heartwood…[1.170g/cm^3]",pdf 19. "African acacias - monographs and manuals , Final Tech. Rept , R. Barnes, S. A. Harris; Oxford Forestry Inst., 5/'02, 34p.;"Extinction of Acacia nilotica in Israel - a methodological approach" Mordechai E. Kislev, Bar Ilan U., '90, 12 p; "Investigation of selected wood properties and the suitability for industrial utilization of *Acacia seyal* …grown in different climatic zones of Sudan" PhD Thesis: Hanadi Mohamed Shawgi Gamal, Dresden U. of Tech. 2014 [Older trees growing in more arid areas had significantly higher density] _____ C. For comparison "Selected wood properties and potential uses for plantation teak and poumuli" ACIAR Proj. rept FST/2007/020, Gary Hopewell, Sr. Tech., _____

MICRO-KOSHER:

DRINKING WATER FOR CHAREIDIM [144]

II GATEWAY TO MICROBIOLOGY & MICROSCOPY

When it comes to eating creatures that live in the water, we are told:

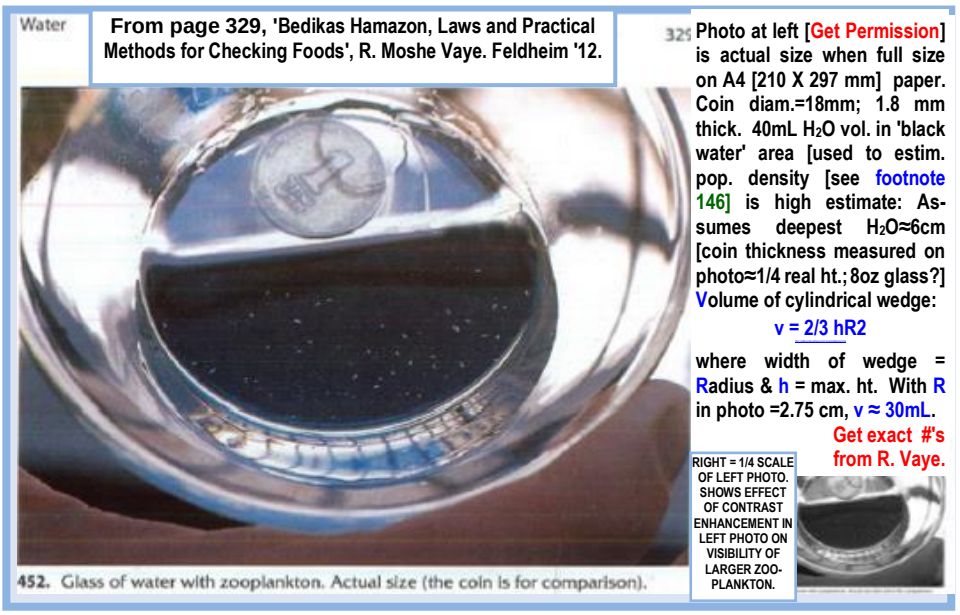
וְכֹל אֲשֶׁר אֵין-לוֹ סְנַפִּיר וְקַשְׂקֶשֶׂת, בַּיַּמִּים וּבַנְּחָלִים, מִכֹּל שֶׁרֶץ הַמַּיִם,
וּמִכֹּל נֶפֶשׁ הַחַיָּה אֲשֶׁר בַּמָּיִם--שֶׁקֶץ הֵם, לָכֶם. וְשֶׁקֶץ, יִהְיוּ לָכֶם;
מִבְּשָׂרָם לֹא תֹאכֵלוּ, וְאֶת-נִבְלָתָם תְּשַׁקֵּצוּ. כֹּל אֲשֶׁר אֵין-לוֹ סְנַפִּיר
וְקַשְׂקֶשֶׂת, בַּמָּיִם--שֶׁקֶץ הוּא, לָכֶם.

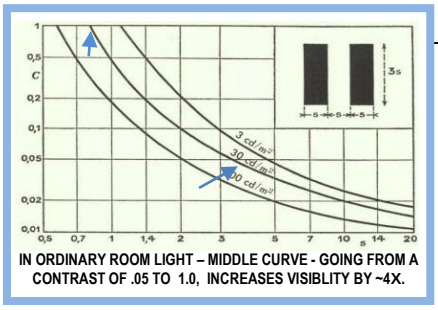
And all that have not fins and scales …of all the living creatures that are in the waters, they are a **detestable** thing unto you, and they shall be a **detestable** thing unto you; ye shall not eat of their flesh, and their carcasses ye shall have in **detestation**. Whatsoever hath no fins nor scales in the waters, that is a **detestable** thing unto you. **VAYIKRA 11:10-12**

In this brief space of three verses, the word שֶׁקֶץ, *detestable or detestation* occurs four times. It's a measure of how much we're to distance ourselves from eating water creatures that don't have fins and scales.[145] But natural bodies of water are not only full of creatures that we can readily see – where whether they have fins and scales will be readily apparent. The waters abound in minute creatures also – including some that can't be clearly resolved with the unaided eye. Are we forbidden to eat these microscopic creatures as well – if they don't have fins & scales? Is there a size or measure of visibility below which we are allowed to eat creatures from the water – regardless of the presence of these simonim?[146]

This question came up in NYC when some discovered nearly microscopic creatures – copepods – in the drinking water. What are copepods? They're "typically 1 to 2 [mm] … long, with a teardrop shaped body and large antennae. Although, like other crustaceans, they have an armored exoskeleton, they are so small that in most species, this armor and the entire body, are almost totally transparent."[147] Clearly, they're not among the kosher species.

Also clearly, at 1-2 mm, they might be quite visible – though with nearly transparent bodies in clear water, it's very hard to see them. It's almost impossible with the unaided eye to see if they have fins and scales or even to determine if they're creatures at all or just some innocuous debris. The problem is compounded when we are in fact looking not at whole living creatures but only smaller parts of dead ones.





[144] From #74, p140 notebook version of this sefer.

[145] See Pes. 23a on other laws derived from these vers's. Some creatures live at times in water, land & air & have more restrictions. The same law is repeated - with טָמֵא "unclean" instead of detestable -- in Dev. 14:9-10

אֶת-זֶה, תֹּאכְלוּ, מִכֹּל, אֲשֶׁר בַּמָּיִם: כֹּל אֲשֶׁר-לוֹ סְנַפִּיר וְקַשְׂקֶשֶׂת, תֹּאכֵלוּ וְכֹל אֲשֶׁר אֵין-לוֹ סְנַפִּיר וְקַשְׂקֶשֶׂת, לֹא תֹאכֵלוּ--טָמֵא הוּא, לָכֶם.

…whatsoever hath fins and scales may ye eat; and whatsoever hath not fins and scales ye shall not eat; it is unclean unto you.

[146] Eating tiny creatures - 'worms' - found in H_2O, flour, fruit etc. is discussed in דיני תולעים Shulch Aruch, Yoreh Deah, sim. קפ; Chulin 68; 'Bedikas Hamazon…', R. Moshe Vaye. Feldheim '12. This has ** 'usually infested' - for both dried figs in all 8 countries with data [incl. Israel & USA] [p 343] & NYC tap water [p328-30].~5x magnif. of copepods is called 'slightly magnified' and is shown against dark blue background; 'actual size' photo [above] is against blue-black background, [with ~40, ~1 mm long [& ~same # of much smaller]'zooplankton' in ≤40mL. H_2O. "OU found some locations [in NYC] that consistently have copepods at the level of 5-15 large copepods per gallon, and double that amount of small ones." OU Fact Sheet on NYC Water [8/13/'04]. 15/gal.≈ 4/liter= 0.159/40mL: ~0.4% of the infestation rate shown in R. Vaye's photo. The high contrast photo compared with low contrast reality increases visibility by a further linear factor ~4, [See fig. at left, adopted by Y. Le Grand, Form and Space Vision, 1967, from 'The four variables of the visual threshold', P.W.Cobb & F.K.Moss, J. Franklin Inst. 1928, V. 205, p. 831-47]. Photo looks 1000X worse than OU's [15/gal.] high-end reality. Note: creatures are invisible in clear H_2O crescent near bottom of R. Vaye's photo [where, on the basis of random distribution & volume, ~5-15 should be found] & in 1/4 scale insert [fom ASA], simulating effect of contrast enhancement, at right.

[147] Wikipedia, which adds:~'Some polar copepods reach 1 cm.' See note S, p.45.

The OU put out a 3,200 word paper on this issue[148] suggesting, among other things that: "They are best viewed in a shallow bowl of clear plastic, with black background behind it. The antennae and tails of the larger copepods are discernable without magnification." In this case, the "larger copepods" were defined as up to 1.4 mm long and ~0.3 mm thick, while the average length is given as 0.8mm.

If such tiny creatures were viewed against a black background in a bowl –presumably resting on a solid surface - this would hardly have been the standard used in the days of our sages when they were confronted with this issue on a daily basis in Eretz Yisroel. Against a black background on a solid, steady support, the surface of the water would be smooth and free of any "sparkle like" reflections. The ambient light that would be scattered by the slight difference in refractive index of the copepod and the water would show up as a bright image against the black background. This would greatly enhance the visibility of creatures that would otherwise be almost completely invisible. Even if they were visible, without the enhancement of the still water and the black background, they would not be distinguishable from detritus unless they were alive and swimming. The great majority of the creatures seen in the NYC situation were dead.

Chazal had a different model. In Shoftim[Judges], they had the parsha of Gidon distinguishing between the men who'd go with him to fight and win the battles of HaShem and those who were not fit[149]. The measure that Gidon used – as overtly instructed by HaShem -- was how they drank from the natural body of water. Those who knelt down and drank directly from the water were sent home. Those who scooped the water into their hand first and then lapped it from their hand, were fit for the victory they'd soon achieve. The Meforshim point out that those who knelt and drank directly from the water--97% of the men--were used to kneeling before idols. Only 3% drank the water from their hands. These 3% - the Chareidim who were worthy of nissim – miracles – also had another concern: if they drank directly from the natural body of water, they'd almost surely ingest whole living water creatures. Swallowing whole live creatures is forbidden by itself – even if they're kosher. Before we eat any creature, we have to be sure that it is dead. This applies even to Non-Jews and is one of the Seven Mitzvahs of the Children of Noah[150].

In the case of drinking from the natural body of water, not only would the men risk consuming whole live animals, they'd also be likely to eat creatures that didn't have fins and scales and were forbidden as detestable. By scooping the water into their hands before drinking, they'd be able to see such creatures and either remove them from their hands or take another scoop of water. This was the standard of visibility for Chareidim in Gidon's time -- water held in the hand in daylight – not water in a bowl on a table with a black backgrund.[151] **[continued]**

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[148] The most dominant species – at times the only species – is Diacyclops thomasi [see Photo, note S, p 45]. Another common species is Mesocyclops edax. Skistodiaptomus pygmaeus appears in smaller quantities. "OU (Orthodox Union) Fact Sheet on New York City Water, August 13 2004" at _____

[149] Shoftim (Judges) 7:4-7 [see text box at the end of this essay.]

[150] The 7 Mitzvahs or 7 Commandments of the Children of Noah are: 1. Don't murder. Gen. 9:6; 2. Don't steal. 3. Don't commit incest – or anything that could lead to it–like promiscuity – where children will be born who don't know who their father is - who might then marry a half sibling without knowing it. 4. Don't curse God. 5. Don't' worship the work of your hands (don't worship idols). 6. Don't eat a limb of a living creature. This includes not drinking blood & not eating whole live creatures. If Non-Jews want to eat frog's legs, they must kill the frog first. 7. Establish courts of Justice.

Non-Jews who observe these 7 laws are considered Tsadikim – righteous people -- in the eyes of God. As with other things in Jewish tradition, there are different opinionson the # of commandments that apply to the Non-Jews. The 7 listed are the most widely accepted list.

[151] The idea that the men were looking for non-kosher creatures in the water was developed from an insight of Prof. Shaul (Saul) Adler, Z"L, of Hebrew U.. In a course on public health & drinking water, he told his students that anyone who noted something from TeNaCh that bore on this issue would pass the course without further questions. He was looking for this story from Gidon. Prof. Adler –a world-class parasitologist –said those who drank directly from the natural body of water would've also eaten many parasites that those who drank from their hands would've spotted & avoided. [Chazal said water from the gound, incl. pipes, rivers & ponds may contain live parasites-like leeches-& one should drink it from one's 2 cupped hands. [Avoda Zara, 12a&b [Noticed in Daf Yomi Sheor of Rabbi Yoseph Gollob, Derech/Ohr Someyach, Parsha Mishpotim, 5778, Yerushalyim.].

After relating this much of the story to R. Yisroel HaLevi Belsky, Z"tsL, (in '05?) [nifter: Erev Shab., Yithro, 5776] I realized that Prof. Adler, 10th in a line of rabbis from father to son, would've known Chareidim who drank from their hands wouldn't have wanted to eat whole live creatures or anything -alive or dead -- that wasn't kosher. [Another story would be Elisha healing the waters of Jericho with salt at 2 Kings 2:19-22.]

The story of Prof. Adler & Gidon was related to me by Dr. M. Feichtuanger (spell-ing?) at the 50th anniv. celebration of the Heb. U. Medical School, Jer. (Summer, '99). Dr Feichtuanger had been Shaul Adler's student ~half century before & had passed the course by citing Gidon. Dr. Feichtuanger also told me Prof. Adler was up for a Nobel Prize for his work on the extra-erythrocytic cycle of the life of the malaria plasmodium – but that his work on this was lost when the Mt. Scopus campus was captured in the '48 war. He said H.E. Shortt won a prize for the same work instead. [My notes say he said "Nobel Prize" –but since Shortt didn't win the Nobel, he may've been referring to Shortt's becoming FRS in '50, largely for this work.] Shaul Adler was the 1st prof. of the Hebrew U., Dean of the Medical School before it opened, the leading pathologist & the leading person in the life sciences in Israel for 4 decades. In '57 he became the first FRS (Fellow,Royal Society) from that part of the world. He was the oldest brother of Solomon Adler, whose life partly inspired another piece in this sefer: Two Versions of Shabbes and The Marriage of Two Worlds.[See footnote 118.]

In 12/'15, I found the newly published book "The History of the Hebrew University of Jerusalem: Who's Who Prior to Statehood: Founders, Designers, Pioneers", Assaf Selzer, Hebrew U., Magnes Press. This book says that Prof. Andor Fodor (1884-1964) set up the first institute of the University—starting in Jerusalem in March 1923. P. 314:

"The Institute of Chemistry and Microbiology began its activity as the first research institute of the university in the summer of 1924; it operated as a single headed [sic] (in line with the European –German Model) and Fodor was its only professor. During the first years the American Jewish Physicians Committee for the Medical Faculty at the Hebrew University provided the greater part of its budget." There's no mention of Prof. Adler in this 5 p. bio. of Fodor. Prof. Fodor's 1st paper, with his assistant , A. Reifenberg, "Studies on the Nature of the Process of Germination" rec. 1/19/'24 "from the Institute of Biological and Colloidal Chemistry, Hebrew University, Jerusalem" & pub. a yr. later in "Biochemical Journal, 1/01/'25,

II This could be a gateway to microbiology & microscopy. What are the smallest living things we can see with the unaided eye? Begin with the visibility of blood corpuscles in the retina when looking up at a clear bright sky [152]. The smallest things we can see with the unaided eye -- in terms of angular size -- are also among the largest in reality. What are they? The stars! Bright stars against the darkness of the clear night sky form an extreme natural telescope[153]. The water drop and glass bead microscopes...

GIDON (GIDEON) AND THE DRINKING WATER

SHOFTIM (JUDGES) 7:4-7)

וַיֹּאמֶר יְהוָה אֶל-גִּדְעוֹן,
עוֹד הָעָם רָב, הוֹרֵד אוֹתָם
אֶל-הַמַּיִם, וְאֶצְרָפֶנּוּ לְךָ
שָׁם; וְהָיָה אֲשֶׁר אֹמַר
אֵלֶיךָ זֶה יֵלֵךְ אִתָּךְ, הוּא
יֵלֵךְ אִתָּךְ, וְכֹל אֲשֶׁר-אֹמַר
אֵלֶיךָ זֶה לֹא-יֵלֵךְ עִמָּךְ,
הוּא לֹא יֵלֵךְ. וַיּוֹרֶד אֶת-
הָעָם, אֶל-הַמָּיִם; וַיֹּאמֶר
יְהוָה אֶל-גִּדְעוֹן, כֹּל אֲשֶׁר-
יָלֹק בִּלְשֹׁנוֹ מִן-הַמַּיִם
כַּאֲשֶׁר יָלֹק הַכֶּלֶב תַּצִּיג
אֹתוֹ לְבָד, וְכֹל אֲשֶׁר-
יִכְרַע עַל-בִּרְכָּיו, לִשְׁתּוֹת.
וַיְהִי, מִסְפַּר הַמְלַקְקִים
בְּיָדָם אֶל-פִּיהֶם--שְׁלֹשׁ
מֵאוֹת, אִישׁ; וְכֹל יֶתֶר
הָעָם, כָּרְעוּ עַל-בִּרְכֵּיהֶם
לִשְׁתּוֹת מָיִם. וַיֹּאמֶר יְהוָה
אֶל-גִּדְעוֹן, בְּשְׁלֹשׁ מֵאוֹת
הָאִישׁ הַמְלַקְקִים אוֹשִׁיעַ
אֶתְכֶם, וְנָתַתִּי אֶת-מִדְיָן,
בְּיָדֶךָ; וְכָל- הָעָם--יֵלְכוּ,
אִישׁ לִמְקֹמוֹ.

4. And the LORD said unto Gideon: 'The people are yet too many; bring them down unto the water, and I will try them for thee there; and it shall be, that of whom I say to thee: This shall go with thee, the same shall go with thee; and of whomsoever I say unto thee: This shall not go with thee, the same shall not go.' 5. So he brought down the people unto the water; and the LORD said unto Gideon: 'Everyone that lappeth of the water with his tongue, as a dog lappeth, him shalt thou set by himself; likewise every one that boweth down upon his knees to drink.' 6. And the number of them that lapped, putting their hand to their mouth, was three hundred men; but all the rest of the people bowed down upon their knees to drink water. 7. And the LORD said unto Gideon: 'By the three hundred men that lapped will I save you, and deliver the Midianites into thy hand; and let all the people go every man unto his place.'

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v.19(2) p188-93. [4 citations in Google. Sch. 19/6/19] In the article on Prof. Adler, we learn, p. 278: "In 1924 Adler was appointed Assistant in the Institute of Microbiology even before a director had been named, and set up the first subdivision: Parasitology." There's no mention of Fodor in the 5 p. article on Adler. In '28 he was appointed assist. prof. & in '29, full prof. At the invitation of Fodor, Moshe Weizmann began working as a volunteer at the Inst. of Chemistry in '24 & was appointed assistant in that Institute in '26. In '31 he was appointed lecturer & full prof. in '47. "All 23 of Weizmann's publications are characterized by placing chemistry in the service of medicine and pharmacology." [p.388,390] There's no mention of Prof. Adler in the 4.5 page piece on M. Weizmann.

Adler & jr. colleague, Oskar Theodor, publ: 'The Experimental Transmission of Cutaneous Leishmaniasis to Man from *Phlebotomus papatasii*' *Nature* 116, 314-5 (29/8/'25). Submitted from "Microbiological Institute, Jerusalem, POB 250"—with no mention of the HU, which was formally opened Apr/1/'25. Dr. Emanuel Libman [1872-1946] of NYC, [MD, Columbia Col. of Phys. & Surg. 1894] was a key funder of Adler. An earlier paper by Adler & Theodor "A Disease of Fowls in Palestine Characterised by Leucocyte Inclusions" was received by "Annals of Tropical Medicine and Parsitology", 2/13/'25 from the "Microbiological Institute, Jerusalem" with no mention of HU, & published in its March 31, Issue, #1, Vol. 19, 1925 , p 127-135.

This periodical was one of the world's leading periodicals in this field, founded by Ronald Ross, who received a Nobel Prize for his work on malaria [By the standards of today , Ross would have shared the prize with Giovanni Battista Grassi]. Adler's first paper in this periodical that mentions the Hebrew Univserity was "The Identity of Leishmania Tropica [Wright, 1903], And Herpetomonas Papatasii [Adler, 1925]" By S. Adler And O. Theodor [Microbiological Intitute, Hebrew University, Jerusalem) (Received for pub. 10 Sept.,1926, pub in.#4[of 4]1926.) 46 cites,Google Sch 6/19/19

As of Jul.11,1924 the bldg for Bio-Chem Dept. of the H.U. was "nearing completion" the The Jul. 11, 1924 issue of "Palestine Weekly" is given as source for early history of Chemistry & Microbiol. Insts p37,7/11; p63,7/18; p323-4,, Dr. Israel S. Wechsler of NY, AJPC, 10/3; p375, col. 1,par 5, 10/24; p405, 11/7 mentions "...Mr. Selig Weizmann, the Director of the Micro-Biological Laboratory, who is soon to be appointed..."[nothing more in the Jerusalem column –thru 12/12/'24]

"A provisional local curatorium was elected at a meeting of the resident temporary directors of the Hebrew University, held during the visit of Dr. Weizmann in Jerusalem. The curatorium consists of Dr. J. L. Magnes, Prof. Fodor, director of the Bio-Chemical department; Dr. Hugo Bergman, director of the National Library; Dr. Frud [Freud in Palestine Weekly] and Mr. Selig Weizmann [This was Moshe Weiz., Chaim W's brother], director of the Micro-Biological laboratory. Dr. Magnes has been chosen chairman. The curatorium will hold monthly meetings, at which the chairman will render reports." OCR'dtext of 11/7 issue – found in Wisconsin Jewish Chronicle 11 21/'24, p 7_____

Saul Adler was the real life model of the unnamed noble professor who infected himself in S.Y.Agnon's book, "Shira". English transl. Zeva Shapiro, Schocken, '89, p. 553-4. See: "An Uncompromising Search for Truth" Dan Laor, Haaretz, Jul/8/'11.

[152] Such visibility of blood corpuscles & vessels in the eye – & the pulse using similar techniques – show a value in having blood vessels between the light sensitive parts of the retina & the world outside. Blood cells in squids' eyes aren't visible to the unthinking squid. This answers those who say our eyes were poorly designed. A. "Direct visualization and characterization of erythrocyte flow in human retinal capillaries", P.Bedggood & Andrew Metha Biomed, Opt Express. Dec 1/'12; 3(12):3264–77 _____ B. "Investigation of the Source of the Blue Field Entoptic Phenomenon" S. H. Sinclair, et al, Investigative Ophthalm & Visual Sci/, V. 30, #4, 4/'89, p668-73. C. See inside your eye, Part 2: Using a blue light field to see white blood cells moving on your retina " Michael Mauser, youtube video ___

[153] Sirius [A], the fixed star - other than the Sun - that looks brightest from Earth (visual apparent magnitude −1.46), has an angular diameter equal to a line of ~30 aluminum [Al] atoms, 25 cm from the eye. If Sirius were ~30X further away, it would have a magnitude of +6. This is usually considered the limit of naked eye visibility -- away from the light pollution of the city, under the best viewing conditions. Its angular size would then be the same as 1 Aluminum atom 25cm from the eye. This is more than 4 orders of magnitude smaller than the angular diam. of a red blood cell viewed at 25cm. It's also less than 0.1% of the wavelength of visible light. A similar exercise with the blue supergiant star, ζ [Zeta] Orionis [A], closest to Sirius in "Orion's belt," would give us the size of a carbon atom ~0.14 nm. With all of this, under truly exceptional circumstances, some experienced star gazers claim they can see stars of 8th magnitude, 2.5 X further away. _____A micro-VCSEL (a type of laser) with a ~ 1μ beam diam., could also be visible to the naked eye – even at some distance. This might be a good place to introduce diffraction.

See: TABLE OF SIZES MENTIONED IN THIS SEFER p 45.

[A] See **COUNT THE STARS**, for how to locate stars mentioned in this sefer. The Constel. Orion - כְּסִיל - is found in Amos 5:8, Job 9:9 & 38:31.

TABLE OF SIZES Part 1

NOTE	OBJECT	MEASURE: METERS	OTHER UNITS	FOOT-NOTE/	PICTURE -SEE P-
A	OLAM	∞			1-224+
B	FARTHEST GAMMA RAY BURST	~13E25m	4E9 PARSEC	P.7	
C	BRIGHTEST OBJECT [DIST.]	~7.5E25	2.2E9 PARSEC		
D	NEAREST QUASAR [DISTANCE]	~6E24 m	1.8E8 PARSEC		
E	NEAREST GAMMA RAY BURST	~1.3E24	4E7 PARSEC		
F	NEAREST SPIRAL GALAXY: ANDROMEDA [DISTANCE]	~2.5E22m	7.6E5 PARSEC SEE P. 19		
F	MILKY WAY [DIAMETER]	~1.5E21	5E4 PARSEC	53	19
G	SUPERNOVA SN1006 [DIST]	~7.2E19	2.2E3 PARSEC		
F	MILKY WAY [THICKNESS]	~2E19m	6 E2 PARSEC	53	19
H	POLARIS & NEAREST STARS IN ORION & PLEIADES [DISTANCE]	~4E18m	~400 LY	732 & P.19	19, 187
	SIRIUS–BRIGHTEST & NEAREST STAR VISIBLE FROM JERUSALEM [DIST]	8.1E16m	8.6 LY	732-B	19, 187
	ARCHIMEDES: DIST. TO STARS	5E15m	.5 LIGHT YEAR	530	
I	OORT CLOUD [DIAM.]	6E14-6E16m	.06-6.0 LY	719-A	
I	SEDNA [APHELION]	1.4 E14m	936 AU/.015 LY		
I	COMET HALE-BOPP [APHELION]	5.6E13m	371 AU		
I	KUIPER BELT [OUTER DIAM.]	1.6E13m	110 AU		
J	NEPTUNE'S ORBIT [DIAM]	9E12m	60 AU		
K	SATURN'S ORBIT [DIAMETER]	2.9.4E12	19AU		
L	BETELGEUSE [DIAM]	1.5E12m	10AU	732-B	19, 187
	EARTH'S ORBIT [AVG. DIAM]	3.0E11m	2 AU	530	
	ALDEBARAN [DIAM]	6.2E10m	0.4 AU	732-B	19, 187
	SUN [DIAMETER]	1.4E9 m	1,400,000 km		
M	JUPITER [DIAMETER]	1.4E8 m	140,000 km	721	
	EARTH [DIAMETER]	1.3E7 m	12,800 km	530	191
N	~~GANYMEDE[MOON OF JUPIT'R, DIAM.]~~	~~5.3E6 m~~	5,300 km	P. 184	
	MOON [DIAMETER]	3.5E6 m	3,500 km	673	
O	KASRIK TO TEMPLE MT. [DIST.]	~9E5 m	~900 km	626	169, 173
P	KASRIK TO NISIBIS [DIST.]	~9E4 m	~90 km	679	176
Q	ATMOSPHERE [HT. UNIF'M DENS.]	8.4E3 m	8.4 km	127-C	

Part 2 OBJECT

NOTE	OBJECT	MEASURE: METERS	OTHER UNITS	FOOT-NOTE/P.#	PICTURE [SEE P]
	DEPTH OF THE SEA [AVG.]	3.7E3 m	3.7km	600	
	MT. TABOR /RE'EM [HEIGHT]	500 m	0.5 km	614-B	
	NOAH'S ARK [LENGTH]	~150 m	300 cubits	664	
	CYPRESS & CEDAR TREE [HT]	35- 50 m		601	170
	ELEPHANT BIRD & MOA [HT.}	3-3.6 m		616	
	MIDDLE C IN AIR [WAVELENGTH]	1.3 m		120-C_A	
R	ORYX LEUCORYX & BEISA	1.1-1.9m	[BODY LENGTH]	302-B	
	ARON KODESH [IL+W]/2	~1 m	1 meter	194, 195	
	GRASSHOPPER [LENGTH]	.02-.1 m	2-10 cm	P. 86	
S	COPEPOD [BODY LENGTH]	1.4E-3 m	0.8-1.4 mm-	147	
	RAINBOW DROPLET [DIAM.]	1E-3 m	0.8-1.0mm	P.15-B.3	14
	HAIR'S BREADTH	1E-4 m	0.1 millimeter	90, 91	
	POINT OF A NEEDLE	4-12E-5 m	35-117µ	434	115
	RED & WHITE BLOOD CELLS	6-15 E-6 m	7-15 µ [DIAM.]	152	
	BACTERIA [DIAM.]	1E-6m	1 micron= µ	13	
T	VISIBLE LIGHT [WAVELENGTH]	4 - 7E-7m	.4-.7 micron	127	83,84
	VIRUS [DIAM.]	1E-7m	0.1 micron	13	
	RIBOSOME [DIAM.]	2.5-3E-8m	25-30 nm	563	
	DNA [DIAMETER]	2E-9	2 NANOMETERS	563	
	ATOM:HYDROGEN TO CAESIUM [DIAM]	1-5E-10	1-5 ANGSTROMS	153, 189	
U	GAMMA-RAY [WAVELENGTH]	≤1E-11	≤0.1 ANGSTROMS		
	GOLD NUCLEUS	1.4E-14	14 FERMI		
	PROTON OR NEUTRON [DIAM.]	1.7 E-15m	1.7 FERMI	P.15	
V	GRAVITY WAVE DETECTION: Δ L	±4E-18m	4 ATTOMETRES		
W	HARDEST GAMMA-RAYS	≥1E-23m			

A. The world is > its observable parts. Vol. > vol. of 10^{120} protons.

B. A gamma-ray burst [grb] comes from explosion, thought assoc. with black hole formation. Burst usually lasts a few sec. Grb 090423, seen 4/23/'09 --was 2nd most distant object detected to date. Grb's can significantly alter amount of radioactive carbon 14 [^{14}c] & other isotopes in the atmosphere, distorting dating based on radioactive decay & giving false signs of comet or asteroid impacts. See footnote 614 c&d. & see also note u, below.

B.1 Parsec [pc] = dist. when avg. Earth to Sun dist. sub-tends 1 arc-second. **B.2** 1 PC ~3.26 light years [ly], 31e12km & 19e12 miles. **B.3** ly= light year=dist. light travels/yr. in vac. [ly dist. assumes known laws of physics continue to apply – tho' they may not.] **B.4** Speed of light=300e6m/sec. 1 ly =9.46e12 km. **B.5** au =astronomical unit = avg. dist. Earth to Sun ~ 1.5e11m, 93e6miles

C. GRB 080319b, record: farthest object seen by naked eye "most intrinsically bright object ever observed by humans" – tho' high visible brightness lasted only ~0.5 minutes.

D. Quasars: 100× brighter than milky way. Normally caused by galactc collisions with central black holes merging to form a supermassive black hole or a binary black hole system.

E. "GRB 980425 IS by far the nearest gamma-ray burst [13e7 ly] away" key piece for gamma-ray burst puzzle, Marc Türler, Integral Science Data Centre. http://cerncourier.com/cws/article/cern/29135

F. Like Milky Way – solar system's home- gives good idea what Milky Way looks like from 'outside'. Its Apparent Magnitude is 3.44, visible on moonless nights even when viewed from areas with moderate light pollution. Only the brighter central region is visible to the naked eye -- making it look more like a star. There are ~280 stars that are visible with A. M. ≤3.44. http://web.archive.org/web/20080206074842/http://www.nso.edu/PR/answerbook/magnitude.html

G. Brightest stellar event in recorded history, reaching ≥10 × brightness of Venus. 1st seen 4/30 -5/01/1006, guest star noted in China, Jap., Iraq, Egypt & Europe.

H. Polaris: used for finding directions in N. Hemisphere; Orion & Pleiades: mentioned in Tenach & in connection with mabul.

I. These are important for understanding nature of comets – incl. one that may've been involved in mabul. Oort Cloud: ~spherical; Kuiper Belt: ~flattened torus, coplanar with planets.

J. Outer limit of the regular planets; 1st identified as planet: 1846 –from differences of Uranus' orbit from what newtonian gravitational theory predicted. Neptune: 4.9e7m avg. Diam. Uranus: identified as planet:1781—with quality telescopes. Its 5.1e7m avg. d. with avg. orbital diam.: 5.8e12m; visible to unaided eye; slow-84 yr - orbit & low visibility,[5.9-5.32 A.M.]- not identified as planet before this time.]

K. Furthest known planet bef. use of telescopes, avg. d.= 1.2e8m; orbit =29.5 yrs; a.m. +1.47 to −0.24. The distrib. of n isotopes on its moon, titan, suggests formation like Oort Cloud comets ["Protosolar Ammonia As The Unique Source Of Titan's Nitrogen.", K. E. Mandt, et al., Astroph. J. Let., 788:l24 (5p), 6/20/'14.

L . Largest star visible under ordinary conditions by unaided eye—in Orion; in Tenach. Vy Canis Majoris ~1.3× radius, but is variable [7.4 -9.6 a.m.] & is only visible at its brightest range 7.4-8.0 –under the most exceptionally good viewing conditions.

M. Jupiter [Heb.: צדק Tsedek] orbit. diam. =1.56e12m =10.4 au; period=11.9 yrs. Relatively high gravity distorts comet orbits – may lead them to break up & less predictable paths. Comet Shoemaker-Levi-9 –broke into 22 pieces under influence of Jupiter's gravity -observed crashing into Jupiter. 7/1994.

N. Broken comet impact crater is shown on this moon of Jupiter.

O . dist. from where Noah's Ark came to rest according to R. Binyomin ben Yonah– & Temple Mt. – the place where Omar ben Al Khataab built a large mosque – all of wood – possibly wood claimed by Jews of Cizre to have come from Noah's Ark.

P. Distance from where Noah's Ark came to rest [see note O, supra] and the homes of both Yehudah ben Bethyra and Jacob of Nisibis.

Q . Less than 13-15km distance from Tiberius to 400m high, herbage covered hill in NE corner of Sea Of Galilee – so air & herbage look blue, like the sky.

R. Unicorn-like silhouette of oryx suggests tachash skins may've been blue-dyed hides of white oryx -a pony-size gazelle, fits discription in Talmud: "chaya tahora that thrived/was big in desert/wilderness. See p195 "What were the Tachash Skins"

S. Primary species in NYC H_2O: Diacyclops Thomasi; 'OU fact sheet on NYC water, 8/13/'04 https://oukosher.org/blog/consumer-kosher/ou-fact-sheet-on-nyc-water-august-13-2004/

T. Light & other electromagnetic radiation – incl. gamma rays – imeasured by photon energy. Wavelength of light our eyes are most sensitive to in daylight, 0.55 µ, photons=2.254 ev [electron volt]; deepest blue & red 3.1 & 1.77ev, resp. gamma rays [U & W in table] range from 1.24e5 ev to 1.24e17 ev. One ev = 1.602e-19 joules [j]; 1 j=1 watt×1 sec.= 0.24 gram calories =2.4e-4 food cal.

U. Gamma/cosmic rays that don't directly reach Earth, alter atomic nuclei in comets-making distinct isotope patterns that may be detectable if a comet strikes earth: e.g. "Astrophysical Ionizing Radiation and the Earth: A Brief Review and Census of Intermittent Intense Sources" A. L. Melott, B. C. Thomas. Cosmogenic Nuclide Enhancement Via Deposition From Long-Period Comets…" SEE FOOTNOTE 730 E-2.A

V. The strain [= fraction Δ length] in 1st gravity waves detected =±1e-21; "rulers' of 4km, Δl±4e-18m; signal from 2 merging black holes, ea. ~30 sun masses, 1.3e25m distant."observation of gravitational waves from a binary black hole merger"11/ f/'16
http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.116.061102
http://www.dailygalaxy.com/my_weblog/2016/02/epic-discovery-gravitational-waves-detected-from-colliding-black-holes-nasaligo.html

"TASTE AND SEE THAT GOD IS GOOD": MERORIM[155]

II GATEWAY TO PLANT AND FOOD SCIENCES

Chazal – our sages of the Talmud -- say that the best way to understand what mitzvahs are about is to experience them directly – to taste them – from the verse in Psalms: "Taste them and see that God is good..."[156] This applies to all mitzvahs.

Taste is particularly important at the Passover Seder. The reality of our exodus from Egypt is brought to life – partly through taste. We ask and answer real questions – including the question of taste. We eat real, attention getting, story telling foods that physically embody – give us a taste of -- the experiences we are reliving[157]. And, of course, we eat bitter herbs - מְרֹרִים - merorim[158] -- specifically to help us taste - to relive - how the Egyptians embittered - מָרַר - morir -- our lives[159].

At the Seder, those of us who are carefully observant Jews take great care to have kosher matzah. Often very expensive, hand-made matzahs are used. But when it comes to merorim -- bitter herbs -- there appears to be a problem. The custom in many homes is to serve plain, store-bought lettuce – iceberg or romaine – with or without fresh horseradish. We say that the romaine lettuce that we have before us on the table – usually very carefully checked for bugs – is the ideal herb recommended by our sages for the bitter herbs of Peysach. Those of us who use iceberg lettuce say that some of the great rabbis of our time found that iceberg is preferable to romaine because it is far less likely to contain hidden bugs[160].

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[155] Merorim = Bitter Herbs. This was conceived as a result of my unplanned attendance in 5769 ('09) at a public Passover Seder at which iceberg lettuce was served for merorim.

For >20yrs I'd used freshly grated horseradish – following the example of a young man whose parents came from Yemen. He had demonstrated his tradition by taking a heaping tablespoon of freshly grated horse-radish – kept in a tightly covered cut-glass bowl up until the moment it was consumed – & putting the whole amount into his mouth at once. Other people at the Seder table didn't't object. The hosts of the Seder, a religious federal judge & his wife – who was subsequently the mikveh lady -- even facilitated his custom by providing the horseradish & bowl.

From that time, I adopted this custom—with the copious tears that always followed - & never studied the sources of what we are supposed to use for moror. When I was served iceberg lettuce at the Seder and told that great contemporary rabbis recommended it, I began that night to look into it.

[156] A. I 1st heard this: "Chazal say 'Taste them.' Do the mitzvahs & you'll understand what they're about."— from R. Yitschok Twersky, Z"TsL, nearly two decades before my 'iceberg lettuce experience.' See the author's sefer, "A SIGN FOREVER" for details of this encounter with R. Twersky.

טַעֲמוּ וּרְאוּ כִּי-טוֹב יְהוָה אַשְׁרֵי הַגֶּבֶר יֶחֱסֶה-בּוֹ.

Taste them and see that the LORD is good; happy is the man that taketh refuge in Him. PSALMS 34:9.

B. The idea of tasting – experiencing-- mitzvahs to understand them, also comes from the famous expression of emuna when we received the Torah: '…we shall do and we shall understand. :נַעֲשֶׂה וְנִשְׁמָע…'[Ex 24:7]. Tho' usually translated "*...and we shall hear*" or "*...obey*", the same word clearly means "*understand*" in at least 2 prior places in Chumash: 'Come, let us go down, and there confuse their language, that they may not understand one another's speech. אֲשֶׁר לֹא יִשְׁמְעוּ אִישׁ שִׂפַת רֵעֵהוּ:...' & 'They did not know that Joseph understood them, for there was an interpreter between them. וְהֵם לֹא יָדְעוּ כִּי שֹׁמֵעַ יוֹסֵף כִּי :הַמֵּלִיץ בֵּינֹתָם' [Gen 11:7 & 42:23, respectively]. See the author's companion sefer 'A Sign Forever' to understand how the author learned what the Sabbath is about by actually keeping it as a mitzvah.

[157] The matzah that we eat is very much a part of that story—yet the hard, friable, cracker-like matzah that almost all of us eat is almost certainly unlike the "bread of affliction/poor person's bread" we ate at the Exodus. The thin, pocketless-pita-like matzah of the Jews from Yemen, Iraq & Iran is probably closer to what our ancestors ate then & in Talmudic times:

אָמַר רַב פָּפָּא, הַכֹּל מוֹדִים בְּפֶסַח שֶׁמְּנִיחַ פְּרוּסָה בְּתוֹךְ שְׁלֵמָה וּבוֹצֵעַ.

"Rav Pappa said: Everyone agrees that with the mitzva of eating *matza* on Passover, one places the piece inside the whole and breaks."Rashi explains בְּתוֹךְ [inside] as underneath: " מניח פרוסה תחת השלמה " This strongly stuggest that Chazal had foldable pita and Rashi had unfoldable crackerlike matzah. Berachos 39:b

The difference may have arisen due to Peysach-time differences in weather between Europe & the Middle East. In the latter, the air is usually relatively warm & dry, with no rain. So pita like matzah will get hard & dry – but not mouldy. In Europe- where it's often rainy, with moist, cold air- pita-like matzah gets mouldy, while hard, cracker-like matzah stays good. [see footnote 28-D on differences in kitnyos customs]

[158] וְאָכְלוּ אֶת-הַבָּשָׂר בַּלַּיְלָה הַזֶּה: צְלִי-אֵשׁ וּמַצּוֹת עַל-מְרֹרִים יֹאכְלֻהוּ.

And they shall eat the flesh in that night, roast with fire, and unleavened bread; with bitter herbs they shall eat it. EX 12:8

If we miss the 1st seder , we've a 2nd chance a month later:

בַּחֹדֶשׁ הַשֵּׁנִי בְּאַרְבָּעָה עָשָׂר יוֹם בֵּין הָעַרְבַּיִם--יַעֲשׂוּ אֹתוֹ: עַל-מַצּוֹת וּמְרֹרִים יֹאכְלֻהוּ.

In the second month on the fourteenth day at dusk they shall keep it; they shall eat it with unleavened bread and bitter herbs; NUMBERS 9:11

[159] וַיְמָרְרוּ אֶת-חַיֵּיהֶם בַּעֲבֹדָה קָשָׁה בְּחֹמֶר וּבִלְבֵנִים וּבְכָל-עֲבֹדָה בַּשָּׂדֶה--אֵת כָּל-עֲבֹדָתָם אֲשֶׁר-עָבְדוּ בָהֶם בְּפָרֶךְ.

And they made their lives bitter with hard service, in mortar and in brick, and in all manner of service in the field; in all their service, wherein they made them serve with rigor. EX 1:14

[160] I was told that R. Yaakov Kamenetsky, Z"TsL, was among those who recommended iceberg lettuce. His teacher, R. Aaron Kotler, Z"TsL, is also among those cited as recommending iceberg lettuce. "Rav Moshe Sofer wrote that horseradish may indeed be preferable to lettuce, but for an ancillary reason: It is difficult to clean the lettuce of bugs (*Chatam Sofer, OC*:132; cited in *Mishnah Berurah* 473:42. [note cont. next page]

The difficulty with both of these choices is that neither form of lettuce, as usually served by so many of us, is bitter. Such lettuce is almost a byword for bland – particularly iceberg lettuce. Horseradish is also not bitter. A heaping tablespoon of freshly grated horseradish – chrain – may make your face turn red; bring tears rolling down your cheeks and clear your sinuses. It's very sharp. It's really strong. But most people would not call it bitter.

Yet young children at our Seders who know what lettuce tastes like are supposed to take special notice of the lettuce – which is often the only thing standing in for the moror – and ask why we are eating bitter herbs this night. When our young children ask the "Feer Kashes" – the Four Questions, question number three is:

שֶׁבְּכָל הַלֵּילוֹת אָנוּ אוֹכְלִים שְׁאָר יְרָקוֹת; וְהַלַּיְלָה הַזֶּה מָרוֹר.

On all other nights, we eat any vegetable; but tonight, we eat bitter herbs?

Any clever child – and most adults of even ordinary ability - should notice something is amiss. The lettuce is not only not bitter – but there's really nothing unusual about it and no special reason to ask a question. Do we ask about bitter herbs when we're served a salad—or when we're served gefilte fish with chrain?[161] The questions we ask at the Seder table have a special holiness – particularly the questions of our children. It shouldn't be taken lightly that they're asking about the presence of a bitter herb that, seemingly, isn't there.[162]

The situation gets even more difficult when we get to the special brochos on the matzah and moror. We say the brocha on the matzah – with God's name -- and we eat the matzah. Then we say a brocha on the moror – with God's name – and what we eat – if it's typical store bought lettuce – is not moror – it's not bitter. It almost seems that we're using God's name in vain.[163]

It turns out that we're correct in choosing romaine lettuce – or even iceberg lettuce – for moror. These are the right species – particularly romaine lettuce – recommended by Chazal[164]. They're actually the most preferred species – but they're not being eaten at the optimal time in the plant's life . It's as though we wanted to demonstrate the plague of the frogs. We get the right species – but at the tadpole stage in its life cycle. In the tadpole stage, the "frog" has no legs, can't jump and can't even live out of the water.

The Gemora in Pesachim[165] describes the species that are preferred for moror on Peysach. The herb that is most preferred and listed first in the Mishna is חזרת -- chozeres. Chozeres is translated as Cos. Cos is romaine lettuce. The Gemora explains why this species is preferred: it reflects our time in Mitzrayim – in Egypt -- where our life started out mild and then turned bitter. Chazal say romaine lettuce and its kin also follow this pattern[166].

[*The M. B. says here* תמכא *'tamcha' - 3rd in Gemora's list, is chrain – horseradish*]). He wrote that it would be wrong to violate the Biblical prohibition against eating bugs in order to fulfill the rabbinic mitzvah to eat *maror*." *p. 75, c.3 "What's the Truth about ... Using Horseradish for* Maror? " *R. Ari Z. Zivotofsky,* Spr. 5766/'06 Jewish Action, p. 74-7.

[161] The chrain that's served with gefilte fish is usually a mixture of grated or ground horseradish & beets. It definitely has some of the sharpness of fresh horseradish but it isn't suitable for use as moror on Passover because the moror must have nothing added to it. In the case of the chrain used with gefilte fish, it not only has beets but it usually has vinegar & might be prohibited from our homes on Passover because anything containing grain vinegar is forbidden as "chometz" – leven -- during the Passover Holiday.

[162] See, in this sefer : The Question of Bloodletting

[163] Eating moror on Peysach is a mitzvah d'Rabanim because it is not eaten with the paschal sacrifice.

[164] Iceberg and romaine lettuce are different varieties of the same species – as a collie and dachshund are different varieties of dog. Iceberg lettuce, however, was developed by plant breeders in the last several centuries and was apparently not known to Chazal.

[165] Babylonian Talm. 39:a; Jerusalem Talm. 2:5. In both, chicory is listed next after romaine lettuce. Chicory, endive & escarole are in the same family as lettuce & have similar growth patterns & flowers –though their flowers are pale blue- not the pale yellow of lettuce. Chicory is more bitter than lettuce in the form found in the stores. As we will see, this makes it less desirable for moror.

The Gemora says all of the suitable bitter herbs have a whitish sap & a pale green appearance ופניו מכסיפן as clarified in footnote 33, of the Schottenstein Ed., Mesorah Pub. '97. In the Mishna, Moed: Pesachim, 10:3, only chozeres is mentioned for moror.

[166] The Talmud Yerushalmi, Pesachim 2.5 says: Only with lettuce is the beginning sweet and its end, bitter.

ר' חיי' בשם ר' הושעי' כל עצמן אין הדבר תלוי אלא בחזרת מה חזרת תחילתה מתוק וסופה מר כך עשו המצריים לאבותינו במצרים בתחילה (בראשית מז) במיטב הארץ הושב את אביך ואת אחיך ואח"כ וימררו את חייהם בעבודה קשה בחומר ובלבנים

The Talmud Bavli at Pesachim 39a, uses a different expression: "the beginning was soft and the end, hard:

זה שתחילתו רך וסופו קשה אף מצריים תחילתן רכה וסופן קשה

It is not – as many of us may have imagined – that there is a bitter aftertaste in these plants. Some lettuce does have a slightly bitter aftertaste – but it is not usually something that would catch a child's attention. Chazal are talking about something that is really very noticeably bitter – something our children will be inspired to ask about.

Chazal not only give the names of the plants. They describe some of their key physical attributes. They say that the plants have a stem : קלח (kelach) – which may be eaten dried for moror on Peysach – and that they have a white milky exudate: שרף (siraf)[167]. The lettuce – romaine or iceberg - as purchased in local food stores - has neither[168].

Before I read what Chazal actually wrote, I went to a supermarket in Williamsburg, Brooklyn that catered primarily to Chareidim. There, I bought the sort of romaine lettuce that some of the most carefully observant among us buy for Peysach. I tried all of its different parts: inner and outer leaves; tops and bottoms of leaves; large and small leaves and the very bottom of the base of the lettuce. Nothing was notably bitter. Nothing had even a notably bitter aftertaste – except perhaps the base. This lettuce also didn't have a stem or white milky exudate. The thick white veins on some of the larger leaves aren't stems – as some of us imagine – they're thick white veins on leaves.

So, to learn more about lettuce, I went to the library of the nearby N.Y. Botanical Garden -- one of the largest libraries on plant science in the U.S.A. There I "discovered" what was obvi-

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[167] Footnote 31 of Schottenstein, *supra*, translates Rashi on *siraf*: 'Any vegetable which, upon being cut oozes a milk white liquid.' The editor adds "…the Latin term for lettuce, *lactuca*, comes from the milk (*lactate*) – like fluid which it contains."

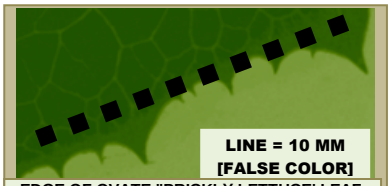
[168] **A** R. Moshe Sternbuch, head of Eidah Charedis Beis Din of Yerushalayim, said ordinary lettuce does have a kelach & showed with his thumb & index finger that it's typically ~8 cm. long. [Personal conversation, Chol HaMoed Peysach, 5773, after Mincha in the Gra Shul, Harnoff, Jerus., Isr. R. Sternbuch was also shown the pictures of bolted & wild lettuce [p. 53] but made no comment on them. When I asked if I, an Ashkenazi Jew, can eat the pita-like matzah of the Yemenite Jews on Peysach, he said that a Talmud Chacham who's familiar with the process that's used to make them & understands that they're not chometz, may eat them.]

B In the same time frame, I asked some of the men I met in a Yemenite Shul on Rechov Amos, n'r home of R. Dovid Soloveitchik about wild lettuce. One, ~75-80 yrs., w' pure white, relatively straight- haired beard -- said they know a tall narrow plant –showing its shape & dimensions with his hands -- that's all over Jerus. Peysach zman. I didn't ask if source of knowledge was old mesorah or new book.]

C At the Seder of R. Yaakov Yehoshua Zaks, Shleeta, in 5775, R. Zaks asked me what the Mesorah was on wild lettuce. In my effort to answer R. Zaks – & my own interest- I made the following inquiries: **C.1** In 5776,[5/1/'16]at N.L.I, I spoke with ד"ר אורי מלמד Dr. Uri Melammed Acad. for the Hebr. Lang. **האקדמיה ללשון העברית.** He said that Erev Peysach in Yemen, Arab farmers sold 'bolted lettuce' [see FIG. J, p. 53] to Jews for Moror. If there was a drought [~every 5 yrs] – & no garden lettuce was available, Jews would pick wild lettuce growing hefker & use it for Moror. He said he'd try to find an account of this in print. [Nothing yet, 11 Nissan, 5778] **C.2** Shab. Ki Seitsei, 5776, met Avyadni Gaimani, near Kotel. He said his uncle from Yemen, Bar Ilan U. Prof. Aharon Gaimani- פרופ' אהרון גימאני [lives in Petach Tikvah with wife, Bruria] & grandmother from Yemen who's ~104 --& clear headed – w'ld probably know about wild lettuce in Yemen.[Prof. G. wants to see trans.] **C.3** On erev Shab. HaGadol, 5777, by Ohr Somyeach Yesh., on Shimon Ha Tsadik St., Jerus., as I looked at ~20cm tall wild lettuce plant, a man stopped, pointed at plant & asked me if I knew what it was. He said it was wild lettuce mentioned by Chazal & it was custom of Sfardi Chacham, Yosef Chaim –the Ben Ish Chai- יוסף חיים מבגדאד [1835-1909] to eat such wild lettuce for moror. The man, Chaim ben Yaakov, of 16 Shmuel HaNovi, ref. me the Rabbi of Bet Knesset Bet Aharon, on Rechov Chaim Ozer [#40] for more info. On Erev Peysach, just after Chatsos HaYom, R. Nissim Teharani, the Rabbi of בית כנסת בית אהרון, said he had a tradition from Shushan, Iran – in S. Mesopotamia- that the wild lettuce on p 53, infra, is the wild lettuce mentioned by Chazal. He couldn't talk with me further as he & about half a dozen others were about to start baking matzah. I left a copy of p 53 with his son. His son said it was not like the more prickly variety of the plant. **C.4** On Shab. Vayigash, 5778, in Jerush. at the Bris of Azaria Yoseph ben Shmuel [Drexler], I spoke with R. Nisan Arisie, [uncle of Shmuel Drexlerr's wife] familiar with Temenie customs- who said he will ask his father. **C.5** Before & after late Mincha, Shab HaGodol, 5778, in the Arzei Habira downstairs shul, I spoke in Yiddish w. R. Yosef Efrati, Rosh Yeshivas Beis Hamedrash L'Halacha B'Hityashvut [Torah & Agric. & former Gabai of R. Yosef Shl. Elyashiv[יוסף שלום אליישיב]Z"TsL, [1910-2012]. He said something in the name of R. Elyashiv that I didn't understand; that he' liked to see a Loshon Kodesh transl. of what I wrote & that he wasn't aware of the Mesora from Shushan on wild lettuce [see C.3, above]. No photos to show him at the time – conversation was unplanned. I will try to speak with him again – with photos & translator. He lives near Ohr Someyach..

D Vertical leaf surface of wild lettuce, with veins inclined upward from the stem [See FIGS. D & H, p53] leads to: **a.** more rapid radiant cooling of vein prickles under clear desert night sky; **b.** efficient condensation of dew; **c.** flow of dew toward main stem; & **d.** catching windblown dust

E The soft prickles on the leaf edges—even on ovate leaf forms [see Fig at right]--also act as nuclei for dew condensation. Together with the leaf veins that feed them, these peripheral prickles may facilitate dew absorption directly at the leaf edge.



EDGE OF OVATE "PRICKLY LETTUCE' LEAF. FULL LEAF WAS 1.5X6 CM. PICKED 5/13/16 BY CAFETERIA DOOR OF NLI

F These, features combined with the windblown seed's sprouting preferably where a wind-stopping wall or rock meats the horizontal – where rain water is concentrated – results in the plant having much more water than would be expected in drought environments.

G The closely spaced prickles may also make them good 'fog catchers'. See footnote 175B on other adantages of vertical leaf orientation.

H SEE ALSO: **1.** 'The role of dew in Negev Desert plants', A. Hill, T. Dawson,O. Shelef, S. Rachmilevitch Oecologia '15, 178:317–27. **2.** 'Leaf surface structures enable…desert grass Stipagrostis sabulicola to irrigate itself with fog water' A. Roth-Nebelsick, et al, J. R. Soc. Interface 9/'12) p. 1965–74 **3.** 'Dew harvesting efficiency of four species of cacti' F.T. Malik et al , 24/4/'15, Bioinspiration & Biomimetics, V. 10, # 3 **4.** 'Dew condensation on desert beetle skin' J. Guadarrama-Cetina, et. al. Eur. Phys. J. E 11/20/'14 37:109 **5.** 'Nature's moisture harvesters: a comparative review' F. T. Malik, R. M. Clement ,D.T.Gethin, et al, Bioinspiration & Biomimetics, V.9, #3 3/20/'14 **6.** "Optimal Design of Permeable Fiber Network Structures for Fog Harvesting", K-C. Park, R. E. Cohen , G. H. McKinley et.al., Mech. & Chem. Eng., MIT, *Langmuir*, '13, *29* (43), p. 13269–77. ; **7.** "Capturing the Clouds: Fog Drip & Cisterns", R. Kourik,'95 ; **8.** "Foliar Uptake of Fog in the Coast Redwood Ecosystem" Emily Limm, et.al. '12, Proc. of coast redwood forests in a changing California : **9.** Republic of Yemen, Nat. Found. for Watershed Mgmt, Manakha Proj. , *Fin. Rept (12'13)* , *Manakh Rainwater and Fog Harvesting*".

ous to Chazal – and well known to anyone today who grows lettuce for seeds.[169] Not long after the time it would be harvested for salads, the lettuce plant – if left to grow -- is completely transformed. It "bolts." It sends up a stalk several feet high with scores of small, yellow, daisy-like flowers on the top. These little flowers turn into dandelion–like puff balls – and those puffs contain the seeds of the lettuce.

So there's the stem that Chazal speak of – and those parts of the plant that grow above the original leaf cluster become unmistakably bitter – even the buds – and ooze a white milky exudate when punctured or broken. In fact, that milky exudate is where lettuce gets its name – from the Latin: *Lactuca* – giving milk.

Chazal also mention חזרת גלין [*chozeret galin*] -- a wild variety of lettuce[170] and say that it can be planted together with the garden version. They say that, with these two kinds of plants, we don't have to worry about כִּלְאַיִם (kelayim) – growing different kinds of plants together[171].

When you see the wild lettuce, you understand why they had to make a point of saying that there was no problem of planting these different herbs together. The wild lettuce doesn't look much like the garden variety. Until you see their flowers [fig I p. 53], you wouldn't even think they're related. Botanists today say

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[169] I remember, as a young boy, seeing a package of lettuce seeds in store garden section. I wondered where the seeds were in the lettuce. I looked carefully through the next head of lettuce my mother bought – but I couldn't find any seeds. It seemed very odd. Where are the seeds? I don't remember what my parents said when I asked them about it – & didn't think about it again until I sat in the NY Botanical Gardens library & read about how lettuce grows.

[170] **A.** "*Aruch* writes that this is a bitter form of lettuce that grows wild in the field." Note 28, p 39a[2] of Schott., 1st Ed. 1st imp.'97. [*Aruch* or: ספר הערוך (Sefer Ha'aruch): a dictionary of Talmudic words & their Hebrew meanings by: יחיאל בן נתן Rabbeinu Nosson ben Yechiel of Rome.(~1030-1106CE)].

B. R. Aaron Yoseph Luria of Betar, at the Seder in 5774 in the home of R. Moshe I. Bloi of Raamot ג, said Talm. Yerush., Kelayim 1:2, shows חזרת גלין as wild lettuce that grows on mounds, heaps of stones or ruins. This is the specialty of Prickly lettuce – a 'ruderal' [related to rubble] a plant that's among the 1st to colonize disturbed ground [from the word גל *-gal-* Gen 31:46, Josh.7:26, 8:29, 2Sam 18:17, 2Kings 19:25, Isa 25:2, Jer. 9:11,51:37, Hos 12:11, Job 15:28]

C. Schottenstein Yerushalmi, Kelayim, '09, p. 2b1, note 10, says it's prickly lettuce, citing, כלאי זרעים והרכבה, by R. Yehudah Feliks, '67. Soncino translates חזרת גלין as "willow lettuce" perhaps referring to the relatively long, willow-like leaves of the wild variety – like the leaf-stems of the weeping willow. There's also a more rare "willow lettuce" or "willow-leaf lettuce" (*Lactuca saligna, see p. 53, Fig. N*). It's like prickly lettuce but even more willow-like.

D. After Peysach 5754, R. Moshe I. Bloi questioned whether חזרת גלין – which has "an extra word"- can be used – based on a discussion of אזוב – *hyssop* - in Succah 13a. However, in Psachim 39a, the doublet 'garden & wild lettuce' is named with one word: חזרת , while the doublet of wild & garden endives [likely = Chicorium endivia L. subsp. pumilum (Jacq.)- wild in Israel- [see ___ for photos, details & distrib. in Israel] & C. endivia L. [escarole & endive are, respectively, flat & curly leaf varieties of one species.]] is introduced with two words each: "רבי יהודה אומר אף עולשי שדה ועולשי גינה וחזרת" [This is R. Yehudah ben Ilai. Most editions have an error with רב instead of רבי [pointed out to me by Ephraim HaLivni.] This suggests wild & garden lettuce are closer than the other pairs & may be regarded as a unity for the purpose of avoiding the issue of "an extra word".

E. Following this we learn the Acad of Shmuel taught a Baraisa with another list begining with Chazeres. R. Yehudah b. Ilay says this includes Chozeret Yulin & Chazeret Galin, then says that any with white milky sap is suitable. Then "others" say that all bitter herbs have a white milky sap and a pale appearance. Rav Huna says the halacha is like the "others". The halacha doesn't appear to follow R. Huna.

F. Also, it's likely that מרריתא דאגמא "moror of the swamp" [Suc. 13a] which Rashi says is חזרת, is the same חזרת גלין which is known to grow, among other places, "on the margins of swamps and lakes". _____ According to Abbaye, [Bab. Amora, d. 339CE] if, before Torah was given, one name covered more than one variety – as with מרריתא דאגמא then that name continues to cover it now.[Suc 13a] If this is Chazeret Galin, then Chazeres covers it also.

G. Wild lettuce: חזרת גלין, should also be good in שביעית [Shviis] the Seventh, Sabbatical or Shmita Year – when the requisite פְּרִי הָאֲדָמָה = *earth grown*, non-hydroponic garden lettuce wouldn't be available unless through the somewhat controversial practices of *heter mechira, otzar beit din*, purchase from non-Jewish owned farms or imported from outside the biblical Eretz Yisroel. Unlike עולשין *- endive/chicory-* noted in both the Mishnah & Gemara of Shviis [מסכת שביעית פרק ז _____18a,b] with several other vegetables that have both wild & garden forms, חזרת isn't mentioned in either. This may be because wild lettuce isn't commonly eaten as a food –even in the Shmita Year– except for moror on Peysach. If this is the reason, then, unlike wild endive & its associates, wild lettuce is completely hefker in שביעית .

H. I was a guest in חֶבְרוֹן - Chevron- for Shabbes Nasso, 5774 & saw hundreds of wild lettuce plants growing along the sides of the main roads & paths. However, only one plant looked like it been broken. If a wild lettuce plant is used for food, its less bitter top would be broken off – stimulating the plant to grow from the sides instead of straight up. This suggests there's no custom to use this plant for food among Jews, Arabs or tourists—who come to Chevron from all over the world. It also shows there's no custom to feed to goats [or other such animals] that were raised by the Arabs in the immediate area.

I. Curiously, in Jerome's ~400CE, Latin transl. – mostly from Hebrew – but with help of Origen's Hexapla [before 240CE] & Akilas' Greek transl. [~130CE, see footnote 781-F 'lactuca agrestes' = 'field lettuce'= mororim at Ex. 12:8. & simil. at Bam. 9:11. This may be thridax agria of Dioscorides in his De Materia Medica [50-77?CE] & is described, together with garden lettuce, in v.2, p 165-6, pdf 110/180 –Eng. Transl., T. A. Osbaldeston at ____ [Crit. Gk. Text, M. Wellmann,1906, V.I, p.207-8, αγρια θρίδαξ, Diosc. II-136 _____ Oldest ms.'s [512CE] color illust. of lact. serriola seems between 'bolted' garden let. [see FIG J, p.53] with fewer sweet, lower leaves – & lact. serriola – wild lettuce – [see Fig C, p 53] which has a much thinner stem. The descr. is between l. serriola & l. virosa = opium lettuce – whose strong smell isn't noted. Virosa is somewhat compatible with serriola, much less with sativa [garden lettuce]. Serriola & sativa are completely compatible. [see: A. Whipkey, K. Kalbaugh, A. Franz, & J. Janick__ 'A Database for Three Dioscoridean Illustrated Herbals' HORTSCIENCE 49(7):977–979. '14; & 'Cytogenetic Studies In The *Serriola* Group Of *Lactuca', K . Lindqvist*, Hereditas, V. 46, # 1-2, P. 75–151, 5/'60.

[171] KIDOSHIM (LEV.19:19) אֶת-חֻקֹּתַי תִּשְׁמֹרוּ--בְּהֶמְתְּךָ לֹא-תַרְבִּיעַ כִּלְאַיִם שָׂדְךָ לֹא-תִזְרַע כִּלְאָיִם; וּבֶגֶד כִּלְאַיִם שַׁעַטְנֵז לֹא יַעֲלֶה עָלֶיךָ

…thou shalt not sow thy field with two kinds of seed…

they're not only related; they may be treated as different varieties of the same species – different varieties of romaine lettuce.[172.A]

This wild lettuce that is the same species as romaine is called prickly lettuce. The underside of the central vein of the main leaves has soft, edible prickles. They help to identify the plant among similar wild plants in the field.[173] The leaves come in several varieties: Some look much like the leaves of the pin-oak tree; others are oblong, with a fine saw tooth edge. They're about a span long -- six to eight inches -- and several finger-breadths wide.

They have special features that would please Rabbis Kotler and Kamenetsky, Z"TsL, – together with all who prepare moror for the Seder. The leaves are quite smooth on both sides and usually completely bug-free. The bitter, white, milky exudate that comes out wherever a leaf or stem is punctured, is also apparently an excellent insect repellent.[172.B]

Another advantage of this plant – as far as those of us who actually prepare the Seder would be concerned – is that it is very common and grows wild almost everywhere Jews are found. Though it is native to Eretz Yisroel [174], it is now found in abundance -- growing wild across much of Europe, North and South America, Australia and South Africa. It grows quickly and easily under a very broad range of conditions: on roadsides, railroad tracks, abandoned fields – as a weed -- and even from cracks in city sidewalks[175-A,B]. For those of us

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[172.A] "L. Serriola (prickly lettuce, [Modern Heb.: חסת המצפן] or wild lettuce) …is completely compatible with lettuce [L. sativa] and is considered by some to be the same species and a direct progenitor of cultivated lettuce (de Vries '97;Kooperman et al. '98.)"p 378 Genetic Resources, Chromosome Engineer-ing, And Crop Improvement, V. 3, Vegetable Crops; R.J. Singh '07, Tayl & Fran.; *"L. sativa and L. serriola…have chromosomes which appear to be identical morphologically and largely homologous, and there are no obstacles to gene flow between these two species.",* P.321, On The Origin Of Cultivated Lettuce*, K. Lindqvist*, Hereditas, V. 46, # 3-4, P. 319-50, 5/'60; L. saligna, *supra,* is only partly compatible with L. sativa & isn't as widely found in Israel.

.B At the time I am entering this note Sivan 5782 [6/23/22] I have been observing and eating wild lettuce for over ten years. Only twice, as far as I recall, have I seen wild lettuce associated with any bugs. Both times – once in the Old City and once near Davidka Sq. [both Jerusalem], the plants were several feet tall and growing near a garbage can or regular place where fresh garbage was left. In both cases, spiders had built webs on the plants to catch the flies that were attracted to the garbage. [See also 180-B.]

[173] These prickles may also help in heat balance, condensing dew & collecting water from fog. [Needs further study] [See footnote 168 D] The prayer for dew - טל - starts 1st day of Passover.

[174] It's actually found throughout Eretz Yisroel – in deserts, mountains, central plains and coastal areas.

[175-A] 1. I spotted first plant in spring,5769 – after Peysach – while looking for mushrooms. It was *L. serriola serriola,* with pin-oak shaped leaves - a 2 ft. foot tall "weed" among the shrubbery of Montefiore Hospital Garage, across from 3378 Steuben, Bx, NY. I later found 2 smaller plants growing from sidewalk cracks in front of Young Israel of Astor Gardens, Allerton Ave., Bx. 2. Just before Shevuous, 5770, I found a cluster of several dozen young prickly lettuce plants in the unplanted front garden of 3307 Bainbridge Ave., Bx. They were from 7-100 cm tall & didn't form any kind of a head or cluster but were growing straight up. The new, central leaves on the young 10-12 cm plants had almost no taste. The older leaves on these young plants were mildly bitter. The leaves & stems on the taller – but still immature – plants were more noticeably bitter. The very young plants had no noticeable white exudate. The newest leaves had almost no prickles. 3. Another plant, ~30cm high, with a branching & more bushy character was found two weeks later at 3327 Bainbridge Ave. On 4 Av, 5770, I saw ~20 plants ~3 ft. tall with lobed leaves & flower buds growing out of the railroad gravel between & alongside the tracks, S end, elevated, #4, train station at Bedford Pk & Jer. Ave., Bx. 4. On 17 Av, 5770, I observed & tasted leaves from 4 kinds of "bolted & flowering" lettuce in the "Ruth Rea Howell Family Garden", E of the Bx River, NY Botan. Gard., Bx. These included a Korean type – provided by Ms. Kim, tending her plants in the Korean cultural plot; deer tongue lett.; butter leaf lett. & romaine lett.. There was no iceberg lett.. The plants were ~28- 40 in. tall – with the dear tongue lett. the tallest. 5. The rom. lett. leaves near to the ground looked much like typical romaine lett. leaves, were very mild & had no noticeable white exudate. They appear to have moved up the stem a few inches as the stem grew. Middle & upper leaves on the stem were distinctly bitter – but palatable with lots of milky exudate when torn in half or broken off the stem. The leaves that I tasted on the other plants – all upper & middle leaves -- were also distinctly bitter but palatable. I was assisted by Mr. Junior Schouten of both NYBG staff & "Big Apple Edibles."

[175-B] 1a. When prickly lettuce turns its leaves on the side - in compass mode – it not only protects its leaves from intense overhead sun – & excessive evaporation in the dry conditions in which it usually matures in Israel -- it also reduces the amount of fine dust that settles on them. Such fine dust on the leaves would reduce their ability to breath & collect sunlight [Israel has occasional Chamsin - חמסין - dust storms]1b. With the vertical orientation of the leaves, the dust will tend to bounce off the leaf & land near the base of the plant. 2. This dust - blown by the wind - like the seeds of the plant -- will tend to accumulate at the base of the same walls or rocks where the wind-blown seeds are likely to fall. 2a. It increases available nutrition & 2b. helps conceal the seeds from birds. 3. The same walls & rocks concentrate wind-blown rain at their base - probably with a high amount of lichen & lightning generated bio-Nitrogen. 4. In a few yrs, a seed that "finds" such a wall or rock outcropping will produce enough progeny to colonize the whole micro-environment at the base of the wall or rock -- which is what we often see. 5. This seed scattering process often puts the seeds on ledges or in narrow crevices out of reach of herbivores. 6a. It also has another adaptation to scarcity. Its leaves don't just die. As the flowers mature, much of the nutritional content of the leaves is systematically drained from them & sent to the flowers -- much as maple trees of NE US drain their leaves & send their sugar to their roots in preparation for winter. 6b. A related process of draining leaves of nutrients in a nutrient poor environment is described in Table 1,"The nutrient economy of Lodoicea maldivica…",P.Edwards,F.Fleischer-Dogley&C.Kaiser-Bunbury, New Phytologist 1/'15; 6c. The following 3 refs on senescence & seed production in annual plants were given to me 7/'21 by Dr. Oren Kolodny, Heb

who don't yet live in Israel or places that have similarly mild winters, wild prickly lettuce would not ordinarily be available fresh in time for the Seder[176]. However, Chazal make a point of saying that the dried stems of the plant may also be used. That's how we know the plant has stems. We also learn from "dried stems" that it isn't necessary to have bolted lettuce to fulfill the mitzvah of moror. We need just enough to remind us of its special features. Having plain, store-bought lettuce, in this sense, would be OK. [177]

So what's the chidush here?[178] Hashem not only gave us a plant that reminds us of Mitzrayim – going from mild to bitter in the course of its life. Even in the bitterness there is the sweetness of God's mercy- with six forms of mercy connected to the 6 days we worked – and in the merit of resting on the seventh -- even in Mitzrayim:[179] In Eretz Yisroel, the wild plant is **1.** Found in abundance throughout the Land in time for Peysach, **2.** Hefker – growing easily in abandoned fields, rubbish heaps and even from pavement cracks. **3.** Easily identified by the soft prickles on leaf midveins[180-A], **4.** The white milky juice is a bug repellant so it is generally free of bugs [180-B], **5.** It's flat, smooth leaves are easily checked, & **6.** It's tasty despite its distinct bitterness. [180-C] Chazal say: Why chozeres – which is also called *chasa* (cos)?... to symbolize that the Merciful one had *chas* – mercy on us. [181]

Where does horseradish fit in? The Torah says that we should have matzah with bitter herbs -- *herbs* in the plural. If we can have two different herbs for moror, we might want to choose horseradish to go with the lettuce. According to the Chofetz Chaim, some Achronim say it's tamcha -- תמכא -- listed in the Mishna among the five herbs that we should use[180-D]. Also, it's been widely used for centuries – particularly in Northern and Eastern Europe where fresh

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U. after I related to him some of my observations on wild lettuce in this note: "Aging in Plants" H.Thomas, 2002, Mechanisms of Aging and Development, 123, 2002, p 747-53, sid.thomas@bbsrc.ac.uk ; "Profiles of Leaf Senescence During Reproductive Growth of Sunflower and Maize" V.Sadras,L.Echarte & F.Andrade, 2000 & "Photosynthate and Nitrogen Requirements for Seed Production by Various Crops" T.R. Sinclair &C.T.De Wit,1975 **7.** Unlike maple leaves, drained wild lettuce leaves stay on plant. This has 3 advantages; **7a.** It's less attractive to herbivores – who see what looks like a dead plant -- & leave the tiny flower buds alone. **7b.** helps wind shake plant & disperse seeds. **7c.** impedes small animals climbing up stem [Most of above are unpub. observations of A.S.A.] **8.** The white milky juice may be a good source for commercial natural rubber product'n: "Biochemical And Genetic Characterization Of Rubber Production In Prickly Lettuce, (Lactuca serriola L.)",197 p, Jared L. Bell, PhD thesis, 5/2013]

[176] In the S. Hemisphere, where Passover comes in what in early fall, fresh lettuce - garden or wild – should be readily available.

[177] I realized this in Ma'ale Amos, Isr., Erev Shab HaGadol, 5773. At the Seder in Jerus. a few days later, I ate romaine lettuce with everyone else & added wild lettuce,I found growing in yard where I was staying [Yochanon HaSandler,#10]–near Kikar Shabbat. 3 weeks later, I counted 40 "Min HaShamayim" wild lettuce plants growing there, at stages A - C, [p 53] ~10x more plants than I'd seen in one place in all of Jerusalem. Fig D. p. 53, shows one growing out of a pavement crack. On 30 b' Omer, 1st time in my life, I saw one in 'compass mode' in same yard. This apt. was for 6 students of R. Dovid Soloveitchik.

[178] Torah scholars have long noted what kind of lettuce we should be eating- e.g.- beautifully illustrated Hebrew sefer, Mororim, ['08, Prof. Zohar Omar,] Bar Ilan U., e.g. p. 51, on חזרת גלין -- wild lettuce. מררים : חמשת מיני המרור שאדם יוצא בהם ידי חובה בפסח / זהר עמר See footnote 170, supra, on this.]The '13 Noe ed. Koren/Steinsaltz Talmud Bavli, Psachim, pt 1,p.192 shows a prickly lettuce leaf for moror.

Also, custom of eating distinctive bitter herbs has been preserved in some Jewish communities, e.g. Jews in Teheran, Iran, eat 2 herbs together on Seder night: the mild, romaine lettuce &red stem Artemisia (*Artemisia scoparia)*- shown at fig. M p. 53, ~50cm long with an eye-catching red stem. It also has a white milky exudate and is very bitter. It's sold primarily for the use of Jews at the Seder. Artemisia is in the same family, ***Asteraceae***, as both lettuce & dandelion.

Artemisia or wormwood is Rashi's translation of הרדופנין – hardofnin - mentioned in a Baraisa [Pes39:a]. I'm indebted to Moshe ben Moshlo HaCohen of Teheran & NYC who was caring for his wife, Ashraf bas Sarah, in Montefiore Hospital,Bx,NY. He described this plant & customs in Iran & wrote down its name in Farsi script[fig. L p.53]. NYU Prof. Barnett Rubin, translated the Farsi, Kaaho Talkh, as wormwood/ Artemisia—based on its use in Persian/Dari speaking Afghanistan is concerned. [Pers com/, 5/10/09] [Picture found at _____]

[179] Midrash Rabbah, Shemos 1:28, on the words "and looked on their burdens" וירא בסבלותם [Ex. 2:11] "Moshe went and established for them the Sabbath to rest" הלך משה ותקן להם את יום השבת לנוח

[180-A] A related plant ,widely found in Israel, "willow leaf lettuce" or "least lettuce" – lactuca saligna – also has some prickles on leaf veins, but its very narrow, more willow-like leaves distinguish it from prickly lettuce.[See fig. N p 53.]Sow thistle–sonchus oleraceus- is also widely found in Israel & has many prickles on its leaves – but not on leaf vein.

[180-B] Tho' bug-free is the usual situation, the author has seen spider webs & small bugs on a few plants that were near garbage. If you see any spider web, check more carefully for bugs. [See also 172-B]

[180-C] I thought of both 6 'mercies' & link to 6 work days, after being asked in the main Beis Midrash of Zichron Moshe Shul, Jerusalem, [27 Shevat, 5774], if I was going to try to make money on my lettuce chidush. I said 'no', noting that the wild plants are hefker, etc. But see Fig. H.1 & I, p. 53, for some possible exceptions to point 3.

[180-D] Mishna Brura, 'וכתבו אחרונים שתמכא הוא חריי"ן בלשוננו' סימן תסב משנה ברורה וביאור הלכה על שלחן ערוך - אורח חיים-לד-ו

[181] Talmud Bavli, Psachim, 39:a

greens were not readily available at Seder time. The Vilna Gaon [see footnote 368] used very fresh grated horseradish.

However, while lettuce is listed first in the Mishna, what is usually translated as horseradish comes last. We can take this ordering as a reminder of the sequence of our experiences in Egypt. We can remember – we can taste and feel – that, not only did our time in Mitzrayim start out mild and turn bitter, but before we left, things got even worse – going beyond ordinary bitterness to painful oppression and מִקֹּצֶר רוּחַ--spiritual exhaustion.[182]

While ordinary bitter herbs must be eaten and affect us mostly through the taste buds, horseradish can act at a distance – through the air - and affect our nose, our eyes, our sinuses and even our lungs[183]. It represents the spiritual bitterness and weakness suggested in the verse quoted.

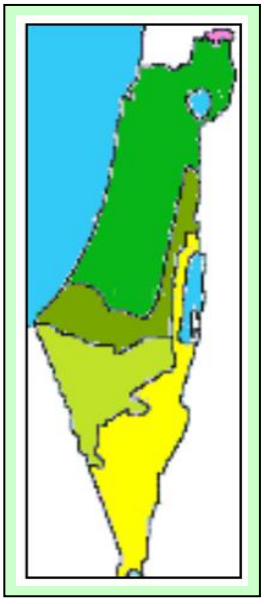
It also reminds us that we complained to Moshe that he "made our savour to be abhorred in the eyes of Pharaoh" [184-A] . The expression "in the eyes" seems superfluous. However, it gives another connection to a mixture of "bolted" or wild lettuce[184-B] and horse-radish. The combination is both savored in the conventional sense and sensed – but not seen -- in the eyes. This is true when we have a Seder alone. At the usual Seder, though, with family, friends & guests, the effect is more in keeping with the verse we started with: we really do "Taste and See" -- when we see the tears & other changes on the faces of those who eat it with us.

We suffered a spiritual weakness that not only affected us but also what we were like in the eyes of the Egyptians. It was the time of our tear filled darkness before the dawn of our liberation.

II This could be a gateway to plant and food sciences. It is also a very tangible – tasteable -- example of what happens when we fail to think adequately about the reality of the physical world – to appreciate the physical aspects of Torah and the words of Chazal. Why should some plants be bitter and some sweet? How does the horseradish produce such a strong taste and make our eyes tear? Why does the wild prickly lettuce – a compass plant – behave as it does? How do plants grow? Are there differences in the sense of taste between people?

See also in this sefer: אֶשָּׂא עֵינַי אֶל-הֶהָרִים I WILL LIFT UP MY EYES UNTO THE MOUNTAINS …II Gateway To Physiological Optics, Ophthalmology, Optometry and Public Health; and: MILK AND HONEY II Gateway to Agriculture, Arboriculture and Apiology – The Study Of Honeybees

Here is a link to Flora of Israel – from Hebrew University:_____-showing wild lettuce in its various forms. The map at right shows the distri-bution in Israel of Prickly Lettuce – covering the whole country



15 PHOTOS OF ROMAINE, WILD PRICKLY LETTUCE AND OTHER BITTER HERBS ARE ON THE NEXT PAGE

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[182] וַיְדַבֵּר מֹשֶׁה כֵּן אֶל-בְּנֵי יִשְׂרָאֵל וְלֹא שָׁמְעוּ אֶל-מֹשֶׁה מִקֹּצֶר רוּחַ וּמֵעֲבֹדָה קָשָׁה

And Moses spoke so unto the children of Israel; but they hearkened not unto Moses for impatience of spirit, and for cruel bondage. EXODUS 6:9

[183] The intact horseradish root has almost no aroma. When cut, enzymes from the broken plant cells produce allyl isothiocyanate- C_4H_5NS – the same as volatile mustard oil, which irritates the sinuses, lungs and eyes

[184-A] וַיֹּאמְרוּ אֲלֵהֶם יֵרֶא יְהוָה עֲלֵיכֶם וְיִשְׁפֹּט: אֲשֶׁר הִבְאַשְׁתֶּם אֶת-רֵיחֵנוּ בְּעֵינֵי פַרְעֹה וּבְעֵינֵי עֲבָדָיו לָתֵת-חֶרֶב בְּיָדָם לַהַרְגֵנוּ.

And they said unto them: 'The LORD look upon you, and judge; because ye have made our savour to be abhorred in the eyes of Pharaoh, and in the eyes of his servants, to put a sword in their hand to slay us.' EXODUS 5:21

[183-B] In the week before Peysach 5782 [2022]– a shmita – sabbatical -year—I asked why Chazal mentioned wild lettuce at all – and offered 3 reasons 1: It was the type of lettuce that we ate in the period between leaving Mitzrayim and receiving the manna. 2: In the shmita – sabbatical- year – it is conveniently available in Israel and completely ownerless – hefker. 3: If there is a drought --in Israel or out of Israel—the garden lettuce crop would normally fail – wild lettuce will continue to thrive. This is probably why the tradition of what Chazal were referring to when they mentioned wild lettuce – was maintained in places like Shushan and Yemen – where there are occasionally droughts – and wild lettuce is native to those areas.

G

H

H.1

TEXT BOX 3
see 4 images directy below]

הרדופנין –
HARDOFNIN -- wormwood- red stem Artemisia (Artemisia scoparia) Fig.M
-in Farsi script, (Kaaho Talkh)
Fig.L [see p 51]

"Willow Lettuce" (Lactuca saligna), Fig. N [see p. 49]

I

Wild Prickly Lettuce: lactuca serriola growing out of a pavement crack in Jerusalem: Fig. E

TEXT BOX 1 **WILD PRICKLY LETTUCE *LACTUCA SERRIOLA*** [Also called *L. scariola, & L. virosa. However, some say ...Virosa is another name for prickly lettuce_____ and others that it is a separate species See:* ***Crossing experiments of lettuce cultivars and species, I. M. De Vries, Pl. Syst. Evol. 171,233-48 '90*** _____ [Virosa is not listed among 'Flora of Israel'.]] **Fig. A,** bottom, is a plant ~5 inches tall, **Fig. B** is ~13 in. These were "weeds" in the shady part of the front garden of 3307 Bainbridge Ave. **Fig C** is ~4 ft., a "weed" in the sunny part of the front garden of 3311 Bainbridge Ave. It was about as green as the other two. Both are betw'n E.208th St. & E.210th St., Bx, NY. **Fig. D** is a mature plant, in Israel, ~8ft. tall. **Fig F** is a leaf with a lobate pattern – from Wikipedia. **Fig G** shows the white milky exudate (seraf) on the main stem of a plant ~10 sec. after a leaf has been broken off. Fig **H** is a mature leaf ~10 sec. after being torn across the width. Seraf comes out of both [***contin. at* TEXT BOX 2, *bottom***]

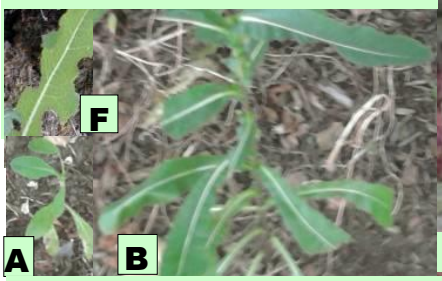
L

FLOWERING STEMS AT THE TOP;
BOLTED LEAVES- DARKER GREEN
ORIGINAL LEAVES – LIGHT GREEN AT BOTTOM

J **ROMAINE LETTUCE** K
Buttercrunch variety
"Bolted", at J, ready to eat, K

M

N


F

A B

C

D

E

[**TEXT BOX 2, *contin. from above***] halves. Distinctive prickles are clearly visible on bottom of the central vein of the leaf. [**Prickly Goldenfleece** [*urospermum picroides*] as found by the author in Israel [Mar 10/15], has much finer, barely visible prickles on leaf veins that are also difficult to detect/not obvious by touch [**Fig. H.1** is from Calif._____].Its flowers [35-50 mm] & flower buds are much larger- like dandelions, not small daisies- & its puff balls are also like dandelions – much bigger & denser than the life size,18mm diam puffball in **Fig. I.** This Fig. also shows: **U**pper **L**eft-**R**ight ~life-size (11-13mm) wild lettuce & garden lettuce flowers, **L**ower **L**eft & **R**ight: **Flower buds - prickly lettuce - with no prickles & Crepis Aspera- with prickles**. This species **also has prickles** on the central veins of the leaves**. Prickly Sow Thistle** [*Sonchus asper*/a] has leaves that are "conspicuously prickly" along their margins but "there are no prickles along the central vein on the underside of each leaf". Dr. J. Hilty, Illinoise Wildflowers, at __ _____] Bronx photos made with ~0.4 Mpix camera by **Joel Garfinkle**, Gouverneur Ave. Bx, NY, as a contrib. to this sefer. Hands are the author's: 8 Tammuz, 5770, ~7:45 PM 6/20/10]

For e-copies of this article or the book that it comes from, please contact the author, A. S. Adler , at : avshadler@yahoo.com

RINGS OF GOLD[185]

II Gateway to Metallurgy and Practical Mechanics

The Mishkan –the Tabernacle- its furnishings and the garments of the Cohanim -the priests- who served in it, are described in great detail. Their parts, dimensions, materials and colors are given. For parts made of silver or gold the weight is often given as well. Three kinds of metals appear to be used in the Mishkan and priestly garments: copper, silver and gold. None of the 3 other metals mentioned in the Chumash- iron[186A], tin[186B] & lead[186C]- appear anywhere in this context. A closer look at the materials listed shows there's actually one other metal. If only 6 metals are mentioned in the whole Chumash, what's the 7th?

To the casual reader who is not familiar with the metals, it looks like there are only six. The seventh metal is זָהָב טָהוֹר – 'pure gold' and is actually very different from the one that seems just like it: זָהָב 'gold'. There's no comparable expression in the Chumash for the other five metals. There's no 'pure silver', 'pure copper', 'pure iron', etc.[187] Pure gold is unlike gold that has even a small fraction of silver or other metals added to it. It's extremely maleable.[188] Even relatively small forces applied to something of pure gold will permanently change the object's shape.[189] Where shape isn't as important as value, like ingots stored in Fort Knox today, gold that's ~99.9% - or purer - is used[190]. Small amounts of other metals added to gold make it much less maleable and far more able to retain its shape in the face of the forces it is likely to encounter.[191]

Still, in the Mishkan, there are fifteen places where we find pure gold specified.[192A] The menorah[4] & its associated utensils[5,6] are pure gold.[192] The ark cover[7] is pure gold[192C] and the linings of the ark – inside[8] & out[9] - are pure gold[192D] The chains[10] that held the breast plate worn by the high priest were also pure gold.[192E] The utensils[11,12,13,14] connected with the table[15] for the show bread were also pure gold[192 F].

When it comes to the rings or hooks however, either in the furnishings of the Mishkan[193 G] or in the clothing of the Cohen Gadol – the High Priest[193 H] – also suggests that they're made according to natural law. H. 8. Settings - מִשְׁבְּצוֹת- 3 sets: 1 set for Choshen stones & 2 sets for shoulder straps:1 for holding shoham stones on shoulder straps on top of shoulders & 1 set for attaching 2 pure Au chains on front ends of shoulder straps [These latter 2 sets are clearly distinguished at Sh.39:6,7 & Sh39: 16-18 [& drawings:Stone/Artscroll,2/'16 Chumash p471&1376]. See also Rashbam[~1080-1160, Rashi's grandson] at Sh. 28:6-14. Chains held by this 3rd set attach at their opposite ends to: 9. Two Upper Au Rings [of חֹשֶׁן - choshen/breast piece with 12 gem stones],Sh.28:23; 10. Rings on lower edge of choshen, Sh.28:26,39:19, which attached a blue cord to: 11. Rings of Au on lower side of 2 shoulder pieces, Sh.28:27,39:21. Random probability of all 7 instances of rings being Au-not pure Au – where 2 choices are equal=1/2^{7}=1/128; 7 instances of rings + 3 of hooks + 3 of settings=1/2^{13}=1/8,192. I. There are 5 other situations where Au is used instead of pure Au– because they're likely to be subject to impact stresses when in transit: 1. Au Coverings On The Poles & Bars[14,15,16,17] בְּרִיחִם- - inserted in the rings; 2. Au Covering On The Vertical Boards[18]- קְרָשִׁים - surrounding the tent part of the mishkan; 3. Au Covering On The Pillars[19,20] - עַמּוּדֵי - for screens that separated holy of holies & entrance to tent part of mishkan; 4. Au Border[21,22,23,[24?]] זַר, on ark, Sh.25:11,37:2;Show Bread Table, Sh.24,25; 37:11,12: - 'וַיַּעַשׂ זֵר־זָהָב לְמִסְגֶּרֶתּוֹ' - means secure; 2 separate borders?] & Incense Table, Sh.30:3,37:26. These are the only places in Torah זַר is used. 'Crown', as זֵר is often rendered, is, e.g. *atarah* עֲטָרָה [2Sam.12:30] or kether כֶּתֶר [Est. 2:17].] These Au borders may also represent a symbolic protective fence– ['...you shall make a guard rail for your roof...וְעָשִׂיתָ מַעֲקֶה לְגַגֶּךָ...'Dt 21:8; 'And make a fence around the Torah. עשו סיג לתורה' Perk. Av.1.1]. They should be sturdier than what's necessary just for physical beauty. They could've easily been bent out of shape if made of pure Au – if something bumped into them. 5. Au bands on entrance pillars[see note 6, table p203]. This adds 4 instances for bars+1:vertical boards+2:pillars+3[4?]:borders+1: bands=10[11?]. J. There are 3 more instances of the use of Au – not pure Au – in the clothing of the Cohen Gadol – where Pure Au would be more easily abraided & worn out compared with alloyed Gold[see note 8, table p203] K. 10[11?]from I+13[from G+H] +3 from J =26[27?] gold;+15 [fromA-F] pure Au =41[42?]. For probabilities of this occurring by chance, see table on p 203.] L. Lower % pure Au may be indication of greater effort to purify it. We don't find it among contributions for Mishkan & Priestly garments. M.1 '[M.R.Hag.R] ...Chaim Kanievsky, Shlit"a [ח. קניבסקי] in his sefer, Derech Chachma [דרך חכמה] on the Rambam Hilchos Klei Ha-Mikdash] [9:5, where Rambam says that the thread of AU used in the Ephod & Choshen was made of pure AU even though it's just Au in the Torah-] in his Biur HaHalacha concludes that the Rambam holds that all the golds are pure...'[personal note, from R. Dovid Meyers- אשר דוד מייערס Jul/ 9/'18, author: ספר מלאכת המשכן וכליו' ,03. p,540+

Below is the Rambam _____– followed by R. Chaim Kanievsky

הזהב שבאריגת האפוד והחושן האמור בתורה ככה הוא מעשהו : לוקח חוט אחד זהב טהור ונוטו עם ששה חוטין של תכלת וכופל השבעה חוטין כאחת וכן הוא עושה חוט זהב עם ששה של ארגמן וחוט אחד עם ששה של תולעת שני וחוט אחד עם ששה של פשתים נמצאו ארבעה חוטי זהב ונמצאו כל החוטים שמנה ועשרים שנאמר ויריקעו את פחי הזהב וגומר לעשות בתוך התכלת ובתוך הארגמן ובתוך תולעת השני ובתוך השש מלמד שחוט הזהב כפול בתוכן :

Transl. by Eliyahu Touger "The gold that is woven in the *ephod* and the breastplate which is mentioned in the Torah was made [should be transl. "is made" A.S.A.] in the following manner. A strand of pure gold was ["is" ASA] taken and placed together with six strands of sky-blue wool and [then] the seven strands were spun as one. He would do [does –ASA] the same with one strand of gold and six of red wool, with one strand [of gold] with six of scarlet wool, and with one strand of gold with six of linen. Thus there would be four strands of gold and there would be a total of 28 strands.[Based on Shem 39:3]:"And they hammered out thin sheets of gold [& cut strands] to fashion into the sky-blue wool, into the red wool, into the scarlet wool, and into the linen." This teaches that there was [is – ASA] a strand of gold woven in them." ["was" may also apply if reference is to the 2nd Temple & not to the Mishkan. The most obvious difference between the 2nd Temple & Mishkan, is that Cu vessels associated with the mizbeach ha nechoshes in the mishkan were Au in 2nd Temple; the altar wasn't made Cu clad wood & it was fixed to the ground. – ASA]

Pdf p 99-100, sefer p. 95-6 פרק ט:ה "הלכות כלי המקדש"

http://beta.hebrewbooks.org/51409

* זהב טהור. פירוש יומא פ"ו ה"ד שבעה וכפיס הם זהב עוב זהב טהור זהב סגור וכו' זהב טהור שמכניסין תוכו לכור ותינו מסך כלום ולכמה' דוקא חיפה שמהורה כתפה זהב טהור בעי זהב טהור ולא כשכתפה זהב מתמת ובמנחות פ"ח כ' ומלקחיה ומחתותיה זהב טהור לא גלרכה אלא לפי גדות מד"א הוחיל ולאשהורי משמר ליעבד זהב כל דהו פירש"י ולא בעי זהב טהור קמ"ל דבעי זהב טהור והכא מיירי הכיכה דכרים שהשהורה כתפה בהן זהב טהור כגון תרון וכפורת שלמן ומנורה לין ומזבח הקטורת שרשיות חיפוי הקרקע וכתפן וכן פעמון ורימון (בפ' קמקורי), ויש דברים שכתוב זהב שמתת כגון הפתוך והמשקן כרוכים וקרסי זהב עמודים ווויס של פרוכת ומסך והכא רבנו לא הזכיר בכולן שלריך זהב טהור מוך מכלן וגבי מנורה בפ"ג מציע"ב ה"ו הזכיר הפסוק, ונלאה דלעת רבנו לטולן שוין ובכולן לריך זהב טהור ונבי מנורה מיירינהו וה"ם בכולהו ולאפיתו ממ"ש בגמ' לילן יומא פ"ד כ' ו' וכיים הם ולא מצינ זהב טהור לכתבין בירושלמי (ובתוס' שם ד"ה וזהב משמע דזהב טוב וזהב טהור היינו הך אבל דהו היינו רק פ"ד דכיון שמכתיר פ"ל וזהב טהור קמ"ל קרא שהרי הוא בכל זהב ובעי זהב טהור ובמנחות כ"ט גבי מנורה שהבליטוה לכור פ' פעמים עד שעמדה על טוריה וכן פירו' בלקלים פ"ו ה"ג ל"ל דלמו דוקא במנורה עשה כן דה"ה בכל הכלים דבעי זהב ול"ע :

THE TRANSLATION BELOW IS VERY ROUGH

In JT,Yom,Ch.4,H.4;Schott.29a2:[There are] 7 [types of] Au: good Au[1][See sub-footnotes, next p.], pure Au[1], treasury Au[2], muphaz Au[3], refined Au[4], drawn wire Au[5],para-aduma-red Au[6]: שבעה זהבים הן: זהב טוב, זהב טהור, זהב סגור, זהב מופז, זהב מזוקק, זהב שחוט, זהב פרויים.

"Pure Au is what's put into furnace & loses nothing". Therefore where Torah writes 'pure Au' ask why 'pure Au' & why doesn't[Torah]write "Au" & in TB Men.88b, tongs & scoops [of menorah] are 'pure Au' not needed except for needs of lamps [since one would've thought] since blackening from fire [obscures Au [ASA note: But if appearance were key, ordinary Au

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[185] From #97, page 64

[186] A. בַּרְזֶל Iron: Sh.4:22, Lv 26:19; Bm.31:22,Bm.35:16, Dt 3:11, 4:20, 8:9, 19:5, 27:5, 28:23,48, 33:25; B. בְּדִיל Tin: Bm.31:22; C. עֹפֶרֶת Lead: Sh.15:10, Bm.31:22

[187] But look at:"pure gold"&"refined gold" - both "by weight".
וְהַמְזַלְגוֹת וְהַמִּזְרָקוֹת וְהַקְּשׂוֹת, **זָהָב טָהוֹר**; **וְלִכְפוֹרֵי הַזָּהָב בְּמִשְׁקָל** לְכָפוֹר וּכְפוֹר-**וְלִכְפוֹרֵי הַכֶּסֶף בְּמִשְׁקָל** לְכָפוֹר וּכְפוֹר. וּלְמִזְבַּח הַקְּטֹרֶת **זָהָב מְזֻקָּק, בְּמִשְׁקָל**; וּלְתַבְנִית הַמֶּרְכָּבָה, הַכְּרוּבִים זָהָב לְסֹכְכִים, וְסֹכְכִים, עַל-אֲרוֹן בְּרִית-יְהוָה. **[1 CHRON. 28:17-18]**
& the flesh-hooks, & the basins, & the jars, of pure gold; …& for the altar of incense refined gold by weight; & gold for the pattern of the chariot, even the cherubim, that spread out their wings, & covered the ark….

וְהָבֵאתִי אֶת-הַשְּׁלִשִׁית בָּאֵשׁ וּצְרַפְתִּים כִּצְרֹף אֶת-הַכָּסֶף וּבְחַנְתִּים כְּבְחֹן אֶת-הַזָּהָב …I will bring the third part through the fire, and will refine them as silver is refined, and will try them as gold is tried;.. **ZECH. 13:9**

וְיָשַׁב מְצָרֵף וּמְטַהֵר כָּסֶף וְטִהַר אֶת-בְּנֵי-לֵוִי וְזִקַּק אֹתָם כַּזָּהָב וְכַכָּסֶף …as a refiner and purifier of silver; and he shall purify the sons of Levi, and purge them as gold and silver…**MALACHI 3:3**

See also: PS 66:10 כִּי-בָחַנְתָּנוּ אֱלֹהִים צְרַפְתָּנוּ, כִּצְרֻף-כָּסֶף.
For Thou, O God, hast tried us; Thou hast refined us, as silver is refined.

שְׁלֹשֶׁת אֲלָפִים כִּכְּרֵי זָהָב מִזָּהָב אוֹפִיר וְשִׁבְעַת אֲלָפִים כִּכַּר-כֶּסֶף מְזֻקָּק לָטוּחַ קִירוֹת הַבָּתִּים.
even 3,000 talents of gold, of the gold of Ophir, and 7,000 talents of refined silver, wherewith to overlay the walls of the houses;**1 CHR. 29:4**

[188] **'The malleability of gold: An explanation of its unique mode of deformation'J.Nutting,J.L.Nuttall,GoldBulletin,3/'77,v10,#1,p2–8[extreme malleability from lack of oxide on sub-grain boundaries.** _____

[189] **Elastic limit [el]99.99% pure[Au]≈500psi.[Gold:Alloying, Properties and Applications, R. Kunter, Encycl. of Materials: Sci. and Tech.V4,p3595,'01]. Cu's lattice parameter(lp)–distance betw. repeating units in the crystal -- is ~1/9th< the 0.408nm lp of Au & strongly increases its el by disrupting its crystal structure. Ag's lp~0.2%> Au with relatively little effect on its el [Crystal lattice is Face Centered Cubic for Au,Cu & Ag. See fig. p.55. Atomic radius of Au= 0.144nm =0.408/4× 2$^{0.5}$] On the effective lattice parameter of binary alloys,V.A.Lubarda, Me-chanics of Mtls,35('03).Table 1,p.60.** _____

Reducing crystals to sub-μ size, as in thin Au layers in microelectronics devices, can greatly incr. el even of 99.999% pure Au. Grain diam. of typical as-cast Au can be closer to 1mm –~1k× larger. Cold working & temperature manipulations can reduce grain size to strengthen & harden Au after it's cast.'Grain Size of Gold and Gold Alloys:A Review and Some Recent Developments' D.Ott&C.J.Raub,*Gold Bull.,'81,14,(2),p.69-74*[see footnote 349 on moltenAu-Cu-Ag calf] 18ct AuCu alloy has ~4-5x tensile strength of pure Au *Fig. 1, 'The Hardness of Jewellery Alloys' C.W.Corti, p6-9, Gold-smiths'Co.,Technical Bulletin,4'07* _____

[190] This explains expression at 1 Kings 7:49, whereTemple menoras were: זָהָב סָגוּר. Tho transl' as 'pure' or 'refined' Au, it actually means 'locked' or 'closed' Au –& may refer to Au kept in vaults in pure form. [Thanks to Uri Veler for noting the unusual Hebrew expression.]

[191] "Metallurgy of Microalloyed 24 Carat Golds"*Christopher W Corti, Gold Bulletin* 1999, 32(2),p 39-47; 18ct Au[12.5%ea.Ag&Cu]:Au colored with ~10X tens. str. of 24ct "A Comparison of the Tensile and Bending Properties of Dental Gold Wires"D.F.Taylor&F.A. Peyton, J.of Dental Res.'51,V. 30 #2, p 290-301. Elastic limits ~100x 99.99% gold, Young's mod.~ same. Alloys are 'white Au'& cont. 4-5% Pt or Pd[See footnote 349] _____ _____

[192] **See Table on p 203 for complete list of Au in Mishkan & additional notes & comments. A** Superscript #'s 1-15 assoc. with footnote 192 A-F count pure Au items in Chumash]; The 1st 3 are: 1. Incense Altar Covering, Shem 30:3; 2. Bells on Robe, Sh.39:25, [At Sh. 28:33,34 they're just Au. Focus is pomegranate colors & placement. Also, at Sh.39:26, bell mat'l not noted –focus is position. If robe is handled with care—hung up when not in use, protected in transit & hem not stepped/sat on, pure Au is suitable.; 3. Plate on Turban, Sh.39:30. B But we learn '*And this was the work of the menorah, beaten work of gold* -- וְזֶה מַעֲשֵׂה הַמְּנֹרָה מִקְשָׁה זָהָב' Bam8:4. but at Sh.37:17'And *he made the menorah of pure Au: of beaten work made he the menorah* -- וַיַּעַשׂ אֶת-הַמְּנֹרָה, זָהָב טָהוֹר; מִקְשָׁה עָשָׂה אֶת-הַמְּנֹרָה'; & in Men.28b we learn Menorah can be any metal – even wood – based in part on 1st Hasmonean Menorah [Rosh HaSh. 24b, Avod.Zar 43a [Sh. Version: more complete & precise; in Bam.: how it was made,even 7 branches left out.] [superscript #'s cont. in body text.] Sh.25:36,38; [tongs & snuff dishes] C Sh.25:17,37:6; D Sh. 25:11, 37:2; E Sh.28:14,22, 39:15(plaited/braided of thin wire, not made of links & won't show deformation.) At Sh.28:24 & 39:17, same chains are 'Au' – not 'pure Au'. However, at both places, mat'l of rings chains are attached to isn't stated. Where both mat'ls are given (Sh. 28:22-3 & 39:15-16), 'pure Au' of chains is contrasted with 'Au' of rings. F [dishes, spoons, covers & bowls]Sh.25:29. Note: pans כַּפֹּת like rest of vessels, are pure Au, but when 12 tribes offer 10 shek Au pans כף[Bm.7:14-80], they're just Au. Also, pure Au isn't in donations for Mishkan - Sh.25:2& 35:5 – suggesting it was refined in midbar.

[193] G. 1. Rings For Ark, Sh.25:12,37:3; 2. Rings For Boards/ Walls, Sh.26:29,36:34; 3. Hooks - וַוֵיהֶם for hanging the veil in front of the Ark, Sh.26:32; 4. Hooks - וַוֵיהֶם - for hanging the screen for the door, Sh.26:37. Though bent hooks will be less noticeable than bent rings – before long they would be bent to the point of being useless; 5. Rings[5] for show-bread table - לְטֹתֹ פָּנִים-, Sh.37:13; 6. Rings For Incense Altar, Sh.30:4, 37:27; 7. Hooks - קַרְסֵים , [50/curtain] for coupling the curtains together using 50 loops on each curtain edge, Sh.36:13. If rings of Ark, Show-bread Table & Incense Altar were attached to their pure Au bodies, the latter would be deformed, but the inner body of these is acacia wood- עֲצֵי שִׁטִּים - [Sh.25:10,23;30:1, resp.] – to which rings are presumably anchored. The fact that these three have wooden cores & aren't solid Au

wherever golden rings or hooks are specified, none are pure gold. No other golden parts that could be quickly deformed in ordinary use if made of pure gold[193-I,J,K], were made of such maleable metal.[193-L] Yet we learn that the ark that held the sapphire stone tablets of the Torah carried itself.[194] Some also learn that, with its thick pure gold cover, it weighed over a ton.[195A] It had four rings of gold and a pair of staves that went through the rings - to be carried on the shoulders of the Levites. If the ark – the center piece of the whole Mishkan and heart of the Holy of Holies -- carried itself, why couldn't its rings be made of pure gold? There would be none of the usual forces to deform them.

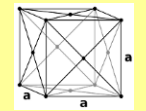
This is to teach that everywhere we go, even in the Holy of Holies, we should act as though, as Chazal say: '*the world pursues its natural course* - עולם כמנהגו נוהג'[195-B]. The world works according to God's natural law – & God will provide nissim - miracles - in their time.[195-C,D]

[see on tachash, p45, note R] II Why is pure Au so maleable? See also in this sefer: FROM THE DUST OF THE EARTH; SAPPHIRE TORAH: FROM THE COPPER SNAKE TO THE TREE OF LIFE & HOW DID THE GENERATION OF THE MABUL GET SO BAD? & HOW DID THE PEOPLE OF S'DOM GET SO BAD SO QUICKLY? & see footnote 614-B,C,D,E

ADDENDUM

BEFORE SAYING THE MISHKAN SEEMS TO HAVE BEEN MADE BY NATURAL LAW, WE SHOULD FIRST LOOK AT ITS OTHER PARTS.

FACE CENTERED CUBIC CRYSTAL UNIT CELL – TYPICAL OF AU, AG & CU. BLACK DOTS MARK POSITIONS OF ATOMS, a IS THE LATTICE PARAMETER.



There are 3 parts that, according to well-known interpretations, indicate the Mishkan was not made according to natural law. All 3 have to do with the meaning of special words & the weight of the objects these words refer to: 1. the weight of the כַּפֹּרֶת -- kapores – the top covering of the Holy Ark; 2. the weight of the 48 קְרָשִׁים -krashim – the vertical wooden wall components of the structure that included the Holy of Holies & 3. the weight of the two לֻחוֹת luchos – the stone tablets insrcibed with the ten commandments & carried in the Aron Kodesh – the Holy Ark.

As already noted,[195-A] the Kapores alone, according to the most well-known understanding, would be >a ton – before incl. the Cruvim that were made of one piece with it, the rest of the Holy Ark[196-A] or its contents. We also learn that the Holy Ark was carried with poles on the shoulders of 4 men[196-B]. The idea that the Kapores was >a ton is based on the understanding that it was a tefach thick[196-C] & made of solid Au. But Ibn Ezra says Saadia Gaon held that the Kapores was 1 kikar[197]. The high end of the value of a kikar in the Mishkan is ~50kg[196-D].This led Uri Cohen to say the Au Kapores was shaped like an inverted box only a few mm thick —givng the sketch below[198].

However, such a cover in pure Au under natural law would be deformed in motion by the weight of the Cruvim. The kapores, though, goes on the Aron Kodesh & the word Aron-אָרוֹן- elsewhere in Tenach is only used for a closed box -- like Yosef's coffin & the 1st Temple's money collecting

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can look like pure Au & pure Au is less reactive to sulfur in smoke & won't tarnish.] & [we're concerned about Temple treasury- not to waste money?] we learn from this why 'pure Au' & here we find many items Torah calls 'pure Au', eg.: aron, cover, table & menorah, tsits, incense altar, chains [joining] ephod & choshen & also bells & pomegranates as found in Pekud [Shem. 39:25-6] [ASA note: Were pomegranates Au?! Ramban:Au bells were inside fabric pomegranates; Radak: between the pomegranates – couldn't find mention of Au pomegranates]& there are items termed just 'Au', eg:, ehpod, choshen, chruvim & [Au on] upright kerashim, hooks of paroches & screen &…[Rambam] didn't see fit for all of these that we need 'pure Au' – other than here[the 'pure Au' thread]& concerning the menorah in Hilchos Bes Ha Bechira, Ch. 3, H. 6, he mentions the verse about the "pure Au" menorah. It seems to be that the opinion of…[Rambam] is all the Au is the same & all of these items need to be 'pure Au'. He shows this by some examples & it applies to all of the utensils. His[Rambam's?]proof is from TBYoma 44b :. "R Chisda said:7 kinds of Au: Au, good[1] Au, Ophir[7] Au, muphaz[3] Au, drawn wire[4]Au, treasury[2]Au, parvayim[5][see supra] Au:

א"ר חסדא שבעה זהבים הן: זהב, וזהב טוב, וזהב אופיר, וזהב מופז, וזהב שחוט, וזהב סגור, וזהב פרוים.

& it does not count "pure Au in the list – like the JT[tho' Tosfos there at the word זהב says it seems that 'good Au'= 'pure Au' but JT counts them as 2 separate types. And what is written in TB Men.88b "that one might have thought that it's enough. Thus one would have only thought , since it blackens, 'pure Au' isn't needed. And in TB Men. 29a, regarding the Menora , they put it thru the funace 80 times until it remained as created. Also in JT.Shekal.ch.6, hal.3, we must say that it's meant not specifically for the menorah but also for all the utensils, since they all need to be made of "pure Au". ENDS "TSARICH EYON-NEEDS MORE STUDY".

1.a. Gen 2:11-12 שֵׁם הָאֶחָד פִּישׁוֹן הוּא הַסֹּבֵב אֵת כָּל־אֶרֶץ הַחֲוִילָה אֲשֶׁר־שָׁם הַזָּהָב: וְזְהַב הָאָרֶץ הַהִוא טוֹב שָׁם הַבְּדֹלַח וְאֶבֶן הַשֹּׁהַם:

[Saadia: Pishon=Nile. Blue Nile & other Nile tributaries drain much of Ethiopia & bring most Egyptian Nile H_2O.Bdolach:frankincense, abundant in Ethiop.Chavilah =Zaila:Saadia– port W coast Red Sea serving Eth. These 2 vs's are s'rce of 'Good Au'. Refers to both Au quailty & ease of extraction.~'Modern surveys in the E. Desert of Egypt & the N Sudan have discovered considerable traces of ancient exploitation of alluvial sands & gravels, & it's probable that in the earliest periods most Au used in Egypt derived from these easily worked deposits.' "Gold Technology in Ancient Egypt Mastery of Metal Working Methods"TGHJames,Gold Bull. 6/72,v.5,#2,p38–42 b. On purity, see infra:I.Tissot,footnote O.1b. 'Pure Au': as found, nothing added & with color & density ~pure Au. c. 'Au':mostly Au, but not 'pure'. 2. סגור = "locked" – suggesting treasury – like bank bullion 3. מוּפָז Solomon's ivory throne overlaid with this:1K10:16. Same throne overlaid w. 'pure Au':2Chr.9:17.Natur'l Au-Ag ivory color alloy? from special place: Uphaz [JTYoma 29b –citing Jer10:9.Pure:nothing added; lustrous & reminiscent of pearls [Yoma 44b-45a 4. מְזוּקָק Refined: put through a furnace &/or other purifying process. see infra note O.1.a 5. שחוט drawn wire/thread 6. פרויים Midr. Rab. on Au: Shir ha-Shirim 3:10 פרוים ריש לקיש אמר: אדום דומה לדם הפר 'R'Sh Lokesh says [it means]red like blood of young bull'[But blood color same:bull & chicken!]possible metathesis"Red[Au]like the para aduma'-a Au-Cu alloy. See color Au-Ag-Cu alloy diag. p94. 7.a. אופיר From Ophir[brother of Chavilah& Sheba, all 3,Ever's son Joktan's sons,[Gen10:29]like 'good Au' in Chavilah. b. In early 16th cent,Zaila:Afr/RedSea coast,Gulf of Aden,traded eleph. ivory&Au dust from Ethiop. to Egypt, Levant & India. ii.British Mus. c. Un-natural unicorns:Nepal,1911;Maine'35;Circus'80's d.'Unicorn found in Iceland":sheep w.natur'l fused horn,4/24/17, see photo right. On tachash,see footnoteR[4]:UNICORN,*p 45* [see also 829]

2.'Hilchot Klei Hamikdash:הלכות כלי המקדש'[Lawsof The Special Service Objects & Clothing In The Temple]pt 2 of Rambam's: "Book of [Temple] Service ספר עבודה", V.8 Mishneh Torah. 1st part of V. 8 is 'Laws of Beit Habechirah הלכות בית הבחירה ' -Laws of The Chosen House[Temple Laws in future.]In Ch 1,Hal. 18 & 19 of BH: [18]"The *Menorah* & its utensils, the Table & its utensils, the Incense Altar & all the sacred utensils may be made only from metal. If they're made from wood, bone, stone, or glass, they are unacceptable. [19]If the nation is poor, it is permissible to make them of tin. If they [later] become wealthy, they should be made of gold".

3. R. Touger, notes, [TB. Menachot 28b] "when the Greeks controlled the Temple, they defiled all its utensils. When the Hasmoneans reconquered Jerusalem, they were very poor and constructed the *Menorah* of iron staves coated with tin. Afterwards, they acquired more means and made a *Menorah* of silver. Ultimately, they were able to make one of gold."

4. So, where Rambam specifies pure Au in Cohen Gadol's garments– where Torah only says Au, he is a. not decribing clothing in the Mishkan but in the time to come; [R. Touger's translation "was made" etc. should be "is made" –which would apply after Rambam's time.]b. He may specify pure Au as difference in $ of pure Au thread &, e.g.18 ct Au thread is small compared with $ of these garments. c. Processes of purifying Au in his time may've been far more cost-effective than in Moshe's time. [See note O infra, for more on this & refs.] d. There may be a matter concerning Au color – that it's more likely to be the correct color if pure Au is specified. e. In the Mishkan, pure Au isn't specified because i. uniform Au color could be maintained by blending different types Au—reddish, whitish or pure -- contributed by the public -- just as was apparently done with techeles cloths – which could be disassembled into fibers & reblended for uniformity. ii. alloyed Au may've been more resistant to abbrasion in use as clothing fiber &/or iii. more resistant to breakage in processing.

5. Shem.39.3:detail for making Au thread for ephod etc. with "blue, purple, etc". Doesn't say pure Au;Sforno: donors hammered Au into sheets, for artisans to cut into threads. Ramban:this is only place in passage describing how a particular craft was done. [Crasik, Commentator's Bible. 2005]

6. It isn't clear pure Au would have any special advantage – except corrosion resistance in contact with sweat or blood-- & breaks or bends in its individual fibers wouldn't be visible. [but see 4.e.ii, supra]

7. R. Dovid Meyers also noted Tashbatz said Au in kaporis was a tefach thick at edges but otherwise thin.

N. This agrees with Uri Cohen's view of Rashi, Ibn Ezra, Rambam, Abarbanel & Rashbam- that they hold all Au is 'pure Au'.[See footnote 198] However, U.C., there, also says the Meshekh Chokhma, [R. Meir Simcha HaCohen of Dvinsk], at Ex.25:10, distinguished between 'Au' & 'pure Au' depending not on the quality of the metal, but on the method of processing—with 'pure Au' requiring melting in a crucible & the others not involving this but employing other processes.

בכתוב" זהב טהור", הדבר דורש היתוך הזהב, ואילו כאשר כתוב" זהב", הכוונה היא לשיטות עיבוד אחרות , והוא, כי הטהרה היא ההכנסה לכור לצורפן ...שצריך עיבוד לשמוה... אבל הזר זהב והבדים ...לא היה צריך להתיכון."

O.1.a 99+%Au foil from Pharaoh Akhenaten's coffin[~3400BP]was produced by cementation purificat'n –with salt, clay & impure Au – a process previously believed used for 1st time 750 yrs later. [p.45,pdf p.65]"Analyses of Gold and Observations on Ancient Egyptian Gold Metallurgy" "Nuggets are typically much richer in gold than the gold from primary deposits."[p3,pdf.p24]"Gold and Gold Mining in Ancient Egypt and Nubia: Geoarchaeology of the Ancient Gold Mining Sites in the Egyptian and Sudanese Eastern Deserts"Klemm,Rosemarie,[i]Klemm,Dietrich,'13,649+exc'rpt of 1st 67pg,at[ii] 1.b 99%Au foils:tombs of 2055–1650, BCE, Egypt.[alluvial – not refined- based on PGE] I.Tissot,etal "A multi-analytic-al approach to gold in Ancient Egypt" Spectroch.Acta,Pt.B,108,'15, p.75–82,citing 1.c. Jack Ogden "Platinum Group metal inclusions in Ancient• Gold Artifacts"*JHMS p.53-72,11/2'77.* 2. The ancient Egyptian 'cementation' process is described & experimentally carried out in: 'Ancient Egyptian Gold Refining: A Reproduction of Early Techniques',J.H.F.Notton,Johnson Matthey&CoLtd,Gold Bull.,7(2):50-6,6/'74 3. 'Gold Technology In Ancient Egypt: Mastery of Metal Working Methods',T.G.H.James, Brit. Mus., Lond., Gold Bull. 6/'72,v5 #2,38 –42; 4. Other method: selection of found pieces based on density, color & touchstones. Maybe Au that wasn't called 'pure Au' was 'as mined' Au with deliberate additions of Cu to color & harden it or additions of Cu+Ag – for Au color & harder alloy. "…ancient goldsmiths… [used a] touch-stone…[& perhaps could] modify the colours of the markings with organic acids of vegetable origin…[such as those used by]some pre-Columbian tribes" p61 'A Prehistoric Touchstone from France',C.Eluére,*Gold Bull.*,'86 ,19,(2)p 58-61 [See footnote 349-A-H]

194 Bavli, Sotah, 35a, based on Josh.4:11-18 & I Chr.13:9. But, we also learn: in Land of Israel, Ark was sometimes in cow drawn cart: 1Sam 6:8-15; 2 Sam 6:1-6; 1 Chr. 13:7-9.

195 A. Ark Cover of pure Au was tefach thick (San.7a) & 1.5x2.5 cubits [WxL](Shem 25:17). If tefach~.1m & cubit=.5m, Cover=.75x1.25x.1≈.094m³. Pure Au=19.3 kg/liter, ≈1.8mt. But Cover could be Au on wood, like rest of box. See ADDENDUM, infra.

B. T.Bavli,Av.Zara,54b. 3X on one page –re: stars worshipped by fools, stolen grain seed & adulterous relations:Stars continue in their cour-ses – tho' worshipped, grain grows tho' stolen & child is born despite adultery. Cited by Rambam in his discussion of nature of miracles. Moreh Nevuchim [Guide to the Perplexed] Pt 2, Ch 29. A similar idea is found in Ps.148.6:*"He has given nature a statute and it cannot be violated.*

" וַיַּעֲמִידֵם לָעַד לְעוֹלָם חָק־נָתַן וְלֹא יַעֲבוֹר."

C. In "The Building Materials of the Mishkan and Its Vessels (Pt.I)", R.Yitzchak Levy,1.5k wrds on Au & pure Au, nothing on strength.

196 A. Some say bottom of outer Au box also 1 tef. thick: Yom.72b. B. Menach.98b. *"And whence do we know that four persons carried it? — Because it is written, And the Kohathites, two, the bearers of the sanctuary, again two, set forward."* C. *Suk.* 5a, concl. 1 tef. thick. D. T Bechoros 5a-b,n.4,p 5b1: kikar =48 kg, Schot, 1st ed.,1stimp.'03. Biblical and Talmudic units of Measurement, Ronnie Figdor, '12: 54-68kg for Royal Kikkar ronnie@figdor.com.au

197 Ibn Ezra:'All the gold that was used for the work, in all the work of the sanctuary' Ex. 38:24 -

"The *gaon* (Saadiah Gaon) said … the lampstand was made of one talent of gold, likewise the ark cover, " / פירושי התורה לרבינו אברהם אבן עזרא על-פי כת"י ודפוסים ראשונים עם מבוא, ביאורים, ציוני מקורות ומקבילות מאת אשר וייזר

אבן עזרא שמות (הפירוש הארוך) פרשת ויקהל - פקודי פרק לח. "כל הזהב אמר הגאון, למה הזכיר מה עשו בכסף, ולא הזכיר מה עשו בזהב התנופה? והוא השיב, הנה הזכיר, כי המנורה היתה ככר זהב. גם ככה הכפורת, וזהב הארון ומזבח הקטרת. ואין זה נכון, כי המנורה כלה היתה זהב, ולא כן הארון. רק צפוי זהב הוא מבית ומחוץ, וכן מזבח הקטרת, והשלחן והבדים והקרשים, והבריחים מצופים זהב הם כולם. והכפורת היתה זהב כולה. וכפי מה שקבלנו מאבותינו ככר אחד היתה, כי ארכה רב ורחבה רב. ולפי דעתי, שהזכיר מה עשו בכסף שהוא כסף הכפורים. והנה הזכיר, כי על כסף החיוב היה עומד המשכן, שהוא הכולל לכל הכלים. וזה זכרון לבני ישראל. ומי יוכל לשער כמה זהב צפוי כל כלי המשכן "

198 The Weight of the Ark Cover, based on 'The Vessels of the Sanctuary' [in Hebrew] Uri Cohen כהן, אורי בן חיים [on p. 136-8 he discusses 'pure gold' 'gold'. The Chapter is published online as ' זהב טהור" בכלי "זהב" ו' אורי כהן by 'המשכן [Also see footnotes193-M &214]

box– with a hole cut into the top [199] So, we may assume the Kapores is fitted over an already covered box & that the box cover is made like the rest of it – with a wooden core[200]. The result is an Aron Kodesh 4 strong men could carry. [201]

The most common understanding of the krashim is that they were solid pillars of acacia wood, each 10 cubits tall, 1.5c wide & uniformly 1c thick from top to bottom – except for cutouts forming 2 tenons in their lowest c & smaller cutouts near the top for joining each to its neighbor[202].

Taking a c as 0.5m[203], gives a volume of 1.8m^3 & a weight of 1,400kg, each[204] – after allowing for cutouts at top & bottom. These 48 massive units –with a combined weight of ~68mt- were to be hauled by 8 oxen with 4 wagons. These would also haul 5mt of Ag sockets, together with all the other pillars,[205] their Cu sockets, the wash stand [Ex30:18] & Au for a total of ~80mt before including the wagons. Suitable wagons for such a load would add another 27mt – so each ox would be expected to haul 13.5mt. With big, princely oxen of 1mt each, this is ~4× the gross wheeled load such animals usually pull[206]. Using a smaller c[207] & even bigger oxen still leaves ~a factor of 2. One could say 'close enough' & leave it at that – before invoking the road smoothing effects of the Ananei HaKavod - ענני כבוד – Clouds of Glory[208].

But this common view of the krashim isn't the view of the rabbis. They say, first, that they tapered from a c thick at the bottom to a finger's thickness at the top. This alone would halve their weight. Total net weight would drop to 46mt – 61 mt with the wagons. It's Rabbi Nechemia who says both that the krashim were the same thickness top & bottom & that they were solid wood[209]. Such massive beams would be enough to stop an elephant – but what would be the point – since the front end was closed only by a curtain & widely spaced hollow pillars. Though the Rabbis don't explicitly reject the idea that the krashim were solid, they do say that one man would hand one of them to another man – from one wagon to another - & that they wouldn't throw them – out of respect for the Mishkan[210]. This strongly suggests the Rabbis held the krashim were roughly 50 kg ea.[211] – which would bring gross load – including wagons -- down to 20mt or 2.5mt/ox.

How could the krashim be so light? The Torah doesn't say they're hollow –like the Cu altar[212]. There are 3 hints. 1st is the meaning of 'krashim'. It's found 51X in Tenach: 50 for these parts of the Mishkan; once in Ezekiel's 'Ship of Tyre'[Ez27:5-6]:

[all planks] בְּרוֹשִׁים מִשְׂנִיר בָּנוּ לָךְ אֵת כָּל־לֻחֹתָיִם
אֶרֶז מִלְּבָנוֹן לָקְחוּ לַעֲשׂוֹת תֹּרֶן [masts] עָלֶיךְ:
אַלּוֹנִים מִבָּשָׁן עָשׂוּ מִשּׁוֹטָיִךְ קַרְשַׁךְ [?]
עֲשׂוּ־שֵׁן בַּת־אַשֻּׁרִים מֵאִיֵּי כִתִּים

RaDaK suggests it's a kind of forecastle:

קרש ספינתך והוא דרך כלל כי לא יהיה קרש אחד לבד כי הוא אומר על קרשי המגדל שעושין בראש הספינה ועושין אותו המגדל בשאר הספינות מקרשי עץ טובים ויפים ובספינות צור היו עושים מקרשי שן לגדולה ולפאר.

'Framework of the tower [forecastle] made at the bow of the ship"

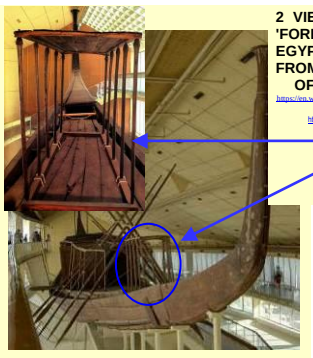
Perhaps it refers to structures like those in photos, [at right], of an ancient Egyptian ship? [213]

The 2nd hint is that, if the krashim were solid or hollow, 18 of the 28c of multicolored decorated fabric [Ex36:8-13] that we see on the ceiling would be invisible both on the inside and the outside – even to the Kohen Gadol on Yom Kippur.

The 3rd & strongest hint is the design of Ag sockets into which the krashim fit- 2 such sockets for each of the krashim. Each is 1×1×.75c. If these were solid, with Ag 10.5 tons/m^3, they'd be 1mt ea. If they're 1/2 empty to allow for oversized tenons of solid wood krashim, there'd be 1/2mt of Ag for each socket. But we learn [Ex38:27] that each socket was 1 talent -- ~50 kg, 10% of what we'd expect from solid Ag[214]. If 50kg sockets were efficiently designed they'd not only effectively anchor krashim of similar weight. They could each be filled with 160kg of mixed rocks & sand without adding 20mt—incl. added weight of stronger wagons -- to the burden hauled by the oxen. This is like the hollow Cu-on-wood Altar that was designed to be filled with sand when we encamped[215]. Unlike this Altar, with the sockets, we're not told explicitly that they're hollow. Instead, we're told their functions, 3 dimensions[216A], material & weight. From these we can understand both their design[216B] & the design of the krashim which they're intended to support.[216C]

Thus, the Torah tells us krashim were relatively lightweight frameworks[216D] that made best use of the trees Yaakov Avinu planted for us. They were efficiently designed – not to over burden those who made the mishkan – the skilled weavers -- or those who set it up & took it down. The design even showed mercy on oxen – lightening their loads when the Ananei HaKavod were no longer around to provide a smooth and level path.

For a discussion of the luchos, which are said by some to have weighed "40 saw" ~400kg for each set- see footnote 122-B.6b-k, B.7& 614B



2 VIEWS OF A FRAMED 'FORECASTLE' ON AN EGYPTIAN WOODEN SHIP FROM BEFORE THE TIME OF AVROHAM AVINU.
https://en.wikipedia.org/wiki/Khufu_ship#/media/File:Giza_Sonnenbarke_HW_2.jpg
http://nautarch.tamu.edu/class/3760khufu/

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[199] Gen.50:26 & 2 Ki 12:9-10, resp.

[200] A. Wood cover fits idea that there were 2 Arks: 1st built by Moshe –all wood–incl. cover; 2nd: Betzalel made Ark & kapore. [Based on Dev.10:1-3 & Shek. 15b, discssed at _____]Wood cover also fits Golden Altar: 1mm Au on wood 'roof'—not solid AU 10 cm thick . See footnote 215-A.2.

[201] Nepalese porters normally carry 90% of their weighttt thru mountains. 'The mechanics of head-supported load carriage by Nepalese porters'G.Bastien,B.Schepens_____ et al,J.of Experimental Bio.'16,p 3626-34 _____100kg; [liftable by avg. fit man: p269 'Practical Programming for Strength Training' M.Rippetoe,L.Kilgore & G.Pendlay,'08 _____

[202] "The Mishkan-The Tabernacle/ Its structure and sacred vessels" R A. Biderman & R.N. Sherman, Mesorah Pub.,'11;Also 'The Chumash:The Stone Edit., (ArtScroll)… Haftaros and Five Megillos,[etc.]'

[203] Range of opinions:handbreadth [~8-10cm] & c [40-60cm]. We also learn that the mishkan was measured with a c of 6 hb's while some of its parts may've been measured with a c of 5 hb's. See T.B. Keilim, ch. 17, Mish. 10]

[204] Density of acacia wood is ≥.8gm/cm^3 [see footnote 143-C]

[205] Chazal say 5 pillars-עמודי of screen of "tent" had 1x1 cubit sq. section. 4 paroches pillars 1x3/4 c rectangular [D. Meyers]. Courtyard Pillars ~1 c sq. sect & 15 c high[D.M. p490:צת , not clear what source] – while Torah says 5c high- machlokes tannaim[R Meir & R. Yehudah b Ilai v. R. Yose[T.B Zev. 59-60 & BMM ch11.4-12]. [If CP were 1x1x15 & solid wood, they'd weigh [15/8]x60x.8] 90 tons, before incl. 3 tons of copper for their sockets alone [Ex 38:29] plus metal trim, ropes, pegs & wagons] Pillars of Solomon's Temple were hollow [Jer.52:21] & as there'd be no obvious reason to have massive solid pillars holding up curtains, assume 'Tent' & Courtyard pillars were also hollow with 1x1c sq. cross section. If made of wood .01m thick with .035m sq. corner pieces [.5x4 x5x.01]+[.035x.035x 4x5]=.1+.025=.125m^3;x.8t/m^3=.1t ea x9=.9tons.60 c'tyard pillars, 5c tall = 0.05t x60=3 tons, ∑=3.9t wood, not incl krashim. [Since amud – not keresh - is used for screen & paroches pillars & there's no apparent value in their being hollow & wide, they may've had a small, solid cross-section of 10× 10 cm, ~.8 kikar ea. &, like krashim, comparable to the wt of their sockets.]

[206] Death Valley 18 mules+2 horses: ~11tons, hauled 33t wagon trains= 3X team wt, mostly in hot desert with some hills & swamps. Wagon for 9t borax was 3.5t empty – with thick walls not needed for Mishkan. '20 Mule Team Days in Death Valley', H.O.Weight, '18; p.67, 'The Twenty Mule Team of Death Valley', T. Faye, '12;; Princes' oxen: extra strong: probably 1-1.5t ea or 8-12t for 8 oxen; 24-36t gross pulled wt & 18--27t payload. _____

[207] Rambam 45.6 cm.; *Shulhan Arukh,* 54 cm.; Hatam Sofer, 62.4 cm.[note 4, Uri Cohen, supra]

[208] ~"…7 clouds:1…passed in front of them leveling valleys & flattening mountains."Mekhilta Beshalach1.After Aaron's death, they disappeared & wagons would be pulled across Jordan Valley & up 800m to Shiloh.

[209] Bavli Shab 98a [positions reversed in 'Baraita De-Melekhet Ha-Mishkan A Crit. Ed. Intro. & Transl', R Kirschner, '92 p226:48: R. Nehemia: tapered to 1 finger breadth thick at top; R. Yehuda:1c thick, top & bottom.]

[210] T.Yerushalmi, Shab 80a,last 5 lines Schot.,ch11,hal. 2: Usually the krashim were handed one at a time by one person to another. T.Yer.80b top: but they weren't thrown 'so as not to treat the [krashim]…with disrespect.'[note cites Rashi: not thrown 'cause they're too heavy & to avoid damage. T.Bav.Shab.98b. At Shem39:33:Rashi from Medrash Tanchuma: Moshe set up Mishkan before it was ready for normal use – because, inter alia, boards were too heavy. [After that, did they get lighter?ASA] [middle bar in midst of boards [shall pass through from end to end]. A Tanna taught: It lay there by a miracle.[This is an anonymous das yachid.]

[211] [give details] [incl note on Leviim 10 amos tall: Shab. 92a]

[212] Ex27:8, 38:7 '…נְּבוּב לֻחֹת'; See footnote 205 on hollow pillars

[213] There's also support for this from two sources: A. Greek transl. of Akilas is: σανιζ [pronounced: sanis] Ex26:15,18 [folding doors, Iliad, 12:453&461] [see p 45 footnote R[1], & B. Ugaritic cognate, *qrs* , right:

[214] This supports Saadia Gaon & Ibn Ezra: the Kapores was 1 kikar- & Uri Cohen's conclusion that the Kapores was box-cover shaped & made of relatively thin metal. [See footnote 198]

[215] A.1 'one should fill the hollow interior of the Cu altar (Ex 27:8) with earth at the time when they encamp - מְמַלֵּא אֶת חֻלָּל מִזְבֵּחַ הַנְּחֹשֶׁת אֲדָמָה 'בְּשָׁעַת חֲנִיָּתָן; 'Issi b. Akiva says: an altar of Cu filled with earth.' Mekhilta d'Rabbi Yishmael 20: 21 מכילתא דרבי ישמעאל . Clean sand to fill the space in minimum size Cu altar, 5×5×3c, would be ~8m^3 or ~16mt, incl. stronger wagons.*ref D.* A.2 Wood body of gold covered altar is also seen as hollow- suggested by it's having a roof- גַּג SH30:3, 37:26 [see: ספר מלאכת המשכן וכליו [see footnote 193.M.1 & notes in Table , p 203 #32, 34 & 38]

B. SEE: 3-WAY MACHLOKES TENAIM ON THE DIMENSIONS OF THE MIZBEACH HA NECHOSHES – THE COPPER ALTAR- AND THE QUESTION OF "SOMECH AL HA-NES" – RELIANCE ON MIRACLES

[216] A. 1c ht & 1c w:Shab. 98b. Sh.26:16,17,19,21,25,32 for length = 3/4c & number of tenons/socket Sh.38:27: 1kikar /socket. B. R. Chaim Kanievsky notes in his sefer Ta'ama D'kra, at the beginning of Parshes Pekudei that Chazon Ish said the sockets must've been hollow. Cited by R.Dovid Meyers in "The Mishkan Illuminated" p97, note 15, Judaica Press,'10. C. BARAITA DE-MELEKHET HA-MISHKAN ch1, line 12 has חלולין hollow D. In Shabbes 98b, https://www.dafyomi.co.il/shabbos/points/sh-ps-098.htm contrasting the views of R. Yehudah & R. Nechemyah on the shape of the krashim also tells us what R. Yehudah may have thought of their structure—that they were made of pieces – possibly in a framework :

a)(Beraisa - R. Yehudah): The boards were one Amah thick at the bottom; they narrowed, and were only a finger thick at the top - it says "Yihyu Samim Al Rosho", just like "Tamu Nichrasu" (they were finished off);
(b)R. Nechemyah says, just like they were one Amah thick at the bottom, also at the top - it says "Yachdav" (they are even).

(c)Question: What does he learn from "Samim"?
(d)Answer: This teaches that we must use whole boards, we may not make them from pieces.

(e)Question: What does R. Yehudah learn from "Yachdav"?
(f)Answer: This teaches that the boards must be even in a line.

This suggests that R. Yehudah did not understand that the krashim were made of "whole boards" – suggesting that he thought they were made of pieces –consistent with the idea that they were in the form of framework .

qrš n. m., "private room" > "apartment", "chapel / sacred alcove", "residence" (Akk. *g/quršu,* "Hauskapelle", AHw 299; "a room in a private house", CAD G 141. Dietrich-Loretz UF 9 1977 55; Xella UF 13 1981 310; with different nuances, Clifford CMC 48, 54: "pavilion", "tent(shrine)", Hb. *qrš.* Cassuto p 701, 'A Dictionary of the Ugaritic Language in the Alphabetic Tradition', G.del Olmo Lete, J.Sanmartin; trans.& ed: W.G.E. Watson, 3rd rev. edit, '15, Brill[*ref A*] *'[W.F.]Albright takes qrs to mean a trellised throne-room' at doc. UT 51:IV:20-24[see p63, ref B;p55 ref C] Ugaritic: lang. close to Hebrew,~time of Exod. from teke, near Mediter. ~430km N of Jerus., attested by 1000+ clay, cuneiform tablets found & transl. in last 100 yrs.*
A _____
B. _____ C _____ D _____

THANKSGIVING AND THE SIX DAYS[217]

שֵׁשֶׁת יָמִים

Three times a year on Yom Tov[218] we read a section of the Torah, Lev. 22:26-23:44, that lists the special times - מוֹעֲדִים [226] - of the year. The list includes Shabbes, the three regular Yom Tovim -- Pessach, Shevuos and Succoth-Shmeni Atseres -- as well as Rosh Hashanah and Yom Kippur. The Torah reading, however, doesn't begin where we'd expect – with the actual list of special times. It begins eight verses before -- with laws dealing with the Thanksgiving or Toda offering. We might expect that laws dealing with offerings that are made on Yom Tov or the other special times would precede a listing of those times. But the Toda offering described in these verses is specifically not for any of what we usually think of as special times of the year. The Toda offering is only made during the six days – when it isn't Shabbes, Yom Tov, Rosh Hashanah or Yom Kippur[219].

The Toda offering looks out of place here. A closer look reveals that it is not out of place at all. The first special time that is listed is not – as most people would expect -- Shabbes. It's the six days. However, the Vilna Gaon [see footnote 368] says that the six days mentioned here refer to the six Yom Tov days on which – in Eretz Yisroel -- we can do the work of preparing food: the first and last days of Pessach, Shevuos, Rosh Hashanah (counted as one long day), the first day of Succos and Shmeni Atseres. These six days are contrasted with Yom Kippur – which is called Shabbos Shabboson – on which the work of preparing food can't be done.[220] This still leaves us with the question of why the Toda offering is included in this Torah reading.

If we allow the plain meaning of the six days – the first special time listed -- the reason for the inclusion of the Toda offering becomes clear. It is to remind us that the six days are also a special time – an appointed season. The six days are the time that we can make the Toda offering and do so many of the other mitzvahs that can't be done on Shabbes and Yom Tov. The mitzvah of putting on T'fillin is an obvious example. Within this Torah reading, at Lev 23:22, we find two more examples: when we reap the harvest of our land – in Israel – we must leave the corner of the field and the gleanings for the poor and the stranger.

In Bamidbar – Numbers – parshas Pinchas -- we find a similar pattern in Chapters 28-29. The detailed listing of the sacrificial services for Sabbath, Rosh Chodesh and Yom Tovim begins with the services of the six days and they're all called moedim – מוֹעֲדִים - appointed seasons [221].

The verses in Leviticus 23 that begin the listing of the special times with the six days, don't merely mention those days. They say what they're for:

דַּבֵּר אֶל־בְּנֵי יִשְׂרָאֵל וְאָמַרְתָּ אֲלֵהֶם מוֹעֲדֵי יְהוָה אֲשֶׁר־תִּקְרְאוּ אֹתָם מִקְרָאֵי קֹדֶשׁ אֵלֶּה הֵם מוֹעֲדָי: שֵׁשֶׁת יָמִים, תֵּעָשֶׂה מְלָאכָה, וּבַיּוֹם הַשְּׁבִיעִי שַׁבַּת שַׁבָּתוֹן מִקְרָא-קֹדֶשׁ, כָּל-מְלָאכָה לֹא תַעֲשׂוּ: שַׁבָּת הִוא לַיהוָה, בְּכֹל מוֹשְׁבֹתֵיכֶם.

Speak unto the children of Israel, and say unto them: The appointed seasons of the LORD, which ye shall proclaim to be holy convocations, even these are My appointed seasons. Six days shall work be done; but on the seventh day is a Sabbath of solemn rest, a holy convocation; ye shall do no manner of work; it is a Sabbath unto the LORD in all your dwellings. **LEV. 23:2,3**

We mark out the Sabbath with rest in a special way: by abstaining from the 39 types of work that we used to make the Mishkan – the Tabernacle -- that we built in the desert when we came out of Mitzrayim[222]. This

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[217] From #103 and #114

[218] 2nd day Pessach [1st day Chol HaMoed in Israel] & 1st & 2nd day of Succos [1st day Suc. & 1st day Chol HaMoed in Israel]

[219] See, for example , the note on Psalm 100:1: מִזְמוֹר לְתוֹדָה... "A Psalm of thanksgiving" in Shachris in the Artscroll Siddur. *" The thanksgiving offering was not offered on the Sabbath and Festivals when only communal offerings were brought. Therefore the psalm was omitted on those days."*

[220] Divrei Eliyahu, Parshat Emor , page 29 of דברי אליהו _____

[221] **A.** Bam 28:2-3 *"Command the children of Israel, and say unto them: My food which is presented unto Me for offerings made by fire, of a sweet savour unto Me, shall ye observe to offer unto Me in its due season* -- [לְהַקְרִיב לִי בְּמוֹעֲדוֹ]. *And thou shalt say unto them: This is the offering made by fire which ye shall bring unto the LORD: he-lambs of the first year without blemish, two day by day, for a continual burnt-offering."*

B. The central idea of the word מוֹעֲדִים is given by its central letters – in the order in which we read them in Hebrew: ע & ד. ע [eyen] means "eye" and ד [dalet] means "door" . The combination appears to mean "seeing the door" or "seeing from the door" – like a witness to an important event. This suggests that the מוֹעֲדִים are witnesses or reminders – that we should constantly be conscious of the creation of the earth, the work of building the Mishkan and the process by which we came out of Mitzrayim, received the Torah and became a people in service to HaShem. It's interesting that the first use of this word – at Gen 1:14 – refers to the lights of the heavens – "*for signs and for seasons* [וּלְמוֹעֲדִים] *and for days and years.*"

[222] The prohibition of work connected with the mishkan is derived from Ex 35:1-4 where the command to build the mishkan אֵלֶּה הַדְּבָרִים "these are the things" is interrupted by the command to keep the Sabbath. The Gemorah in Shabbes 70a explains that דְּבָרִים means "two"; the added ה makes הַדְּבָרִים mean three and the numerical value of the letters in the word אֵלֶּה is 36 – making a total of 39 – reminding us that these are the 39 melachos that were stated to Moshe at Sinai. The Talmud Bavli, Shabbes, 7.2, daf 73a, [and Mishna Shabbes 7.2] enumerates the 39 categories:

אבות מלאכות ארבעים חסר אחת הזורע והחורש והקוצר והמעמר והדש והזורה הבורר הטוחן והמרקד והלש והאופה הגוזז את הצמר המלבנו

can also point to how we are to mark out the six days that precede the Sabbath and what kind of work we should be doing on them. HaShem worked on the first six days to build a world – a dwelling place – a mishkan – for human beings. We, in the image of God, worked on the six days in the desert to build a dwelling place for HaShem. So also on the six days in our own time we should be using the same 39 categories of work that were used to build the mishkan, to build a world as a dwelling place for God.

On Shabbes, these 39 categories of melacha– work –remind us –like 39 angels –melachim –that it's the Sabbath – the day of rest. At each point during the day where we don't do one of these forms of melacha -- not carrying, not turning on light switches, not cooking -- these special messengers are our shomrim – our guardians – helping us to keep the holiness of this seventh day – in the image of God.[223] [see also in this sefer "The Boomerang"]

Each of these 39 Shabbes angels has a "six days" twin[224]. The twins are there to remind us wherever we go and whatever we do on the six days that each of the 39 melachos has a purpose. Whenever we are carrying, turning on light switches or cooking, for example, these 'six day' melachim are there to remind us what we should be doing with our time and efforts: creating a world that is fit for God -- and man in the image of God - to dwell together.

When we sing Shalom Aleichem at the start of Shabbes –before we make Kiddush at our Shabbes table, we invite the ministering angels of Shalom – the angels of God Most High -- to come and bless us in Shalom and then we invite angels to go in Shalom. We might imagine here that we are welcoming with Shalom the 39 ministering angels of Shabbes who are in process of arriving. Then we give a parting greeting of Shalom to their twins – the 39 ministering angels of the six days -- whose job is, for the time being, complete and who are in process of departing[225].

When we understand the unity of the six days and of the Sabbath -- the holiness and synergy of both -- we will create a world of Shalom –a world that is complete -- as Shalom means complete -- a world of Peace – in the image of God[226].

והמנפצו והצובעו והטווה והמיסך והעושה שתי בתי נירין והאורג שני חוטין והפוצע שני חוטין הקושר והמתיר והתופר שתי תפירות הקורע על מנת לתפור [שתי תפירות] הצד צבי השוחטו והמפשיטו המולחו והמעבד את עורו והממחקו והמחתכו הכותב שתי אותיות והמוחק על מנת לכתוב שתי אותיות הבונה והסותר המכבה והמבעיר המכה בפטיש המוציא מרשות לרשות הרי אלו אבות מלאכות ארבעים חסר אחת:

"The principal acts of labor [prohibited on the Sabbath] *are forty less one--viz.: Sowing, ploughing, reaping, binding into sheaves, threshing, winnowing, fruit-cleaning, grinding, sifting, kneading, baking, wool-shearing, bleaching, combing, dyeing, spinning, warping, making two spindle-trees, weaving two threads, separating two threads* [in the warp], *tying a knot, untying a knot, sewing on with two stitches, tearing in order to sew together with two stitches, hunting deer, slaughtering the same, skinning them, salting them, preparing the hide, scraping the hair off, cutting it, writing two* [single] *letters* [characters], *erasing in order to write two letters, building, demolishing* [in order to rebuild], *kindling, extinguishing* [fire], *hammering* [a finishing blow or touch], *transferring from one domain into another. These are the principal acts of labor--forty less one."* [Words in brackets added for clarification.]

[223] When I first began to keep the Sabbath -- in the Chabad House of Boston/Kenmore Square when I was 34 --I knew very little of the detailed laws of Shabbes observance & only a few [CONT. NEXT PAGE] of the 39 categories of work that we're forbidden to do on the Sabbath. I didn't even know that there were 39 categories. All I knew was that we're not supposed to turn electrical switches on or off, that we are not supposed to use the hot water faucet and that we are not supposed to carry anything in the street – not even in your pockets. There was no eruv at that time – a type of enclosure that allows us to carry within it. Later that first Shabbes evening, I learned from the song "Ki Eshmira Shabbas" by Abraham Ibn Ezra, that we're also not supposed to talk about weekday things on the Sabbath.

With these few instructions I began to see how Sabbath observance works. The seemingly unnecessary details that have so little to do with what most people would think of as work have the effect of guarding the Sabbath. Wherever I went and whatever I did – even whenever I thought to say something – I had to think about not doing the few things that I knew that were forbidden on the Sabbath.

I was reminded of the Sabbath at every turn – beginning with not using the light switches when going in or out of rooms. Even when I was out in the street – alone – with no other observant Jews around, I was reminded that it was the Sabbath. I was not only carrying nothing in my hands or pockets – not even keys or ID – but each time I'd come to a traffic light & could push the button to cross the street, I'd remember it's Shabbes. I quickly realized in a very tangible way the remarkable wisdom of these seemingly unnecessary laws. This insight gave me a special strength to continue to keep the Sabbath – & ultimately all Torah laws -- as I've been doing now -- as I write this-- for over 23 years. For more on how my mother & I became shomer shabbes, see my sefer אוֹת הִוא לְעֹלָם A Sign Forever. (Shem. 31:17)

[224] Each angel in Jewish Tradition can only do one thing. If an angel is there to remind us that we should not be doing a particular melacha, another angel must be there when needed to remind us of what we should be doing with the same melacha.

[225] There are some who delay the verse that gives the angels a parting greeting by inserting a long prayer between the verse calling on the angels to bless us and this parting verse. They do this with the understudying that they should not want angels to leave. But these angels of the six days are leaving anyway – whether we give them a parting greeting or not. Delaying the parting greeting – or leaving it out entirely as some do – won't keep them from leaving on time – at least according to the understanding that they are related to the 39 forms of melacha.

[226] מוֹעֲדִים appears to have at its root 2 letters: ע & ד -- which, in the same order, spell עד: witness. Since the name of the letter ע means 'eye' & the name of the letter ד means 'door', it ppears that the idea of this word is 'seeing at the door' : a person who can see either out or into the spaces that the door links together. So, moadim-מוֹעֲדִים are special witnesses/doors/guides for our eyes to the spaces in the spiritual world – within & without – open & concealed- that Hashem wants us to connect with. Thought of & said for the 1st time at tish of R. Yisroel Dov Biderman, leyl Shabbes Pinchas, 5778.

ROCK AND SAND – ALL JEWS ARE KODESH (from #99)

צוּר "Tzur" – Rock – is one of the names of God[227]. It has the qualities of constancy in form, place and time. חוֹל "Chol" – sand-- is much the opposite – though it is made of the same basic material. It is formless and placeless. It's here today and gone tomorrow. It epitomizes inconstancy. Sand taken by itself is also distinct from "sand by the seashore." Sand by the seashore has constancy and is even a metaphor for how countless millions of individuals can – working together—hold back the sea. Sand taken by itself is more a reference to the sands of the desert – the sand of drifting sand dunes and trackless wastes; the sand of sandstorms – wild, dangerous and threatening.

With this understanding, it was very surprising and disconcerting to me to hear some of my fellow Yeshiva students in Israel refer to some other Jews in Israel as "Chiloni." It usually means a secular, non-mitzvah observing Jew – but the root idea of the word is sand. I tried to explain to my fellow students that it was not proper to call Jews sand – particularly when all Jews – and all Human Beings -- are made in the image of God.

Within days of my efforts to correct my fellow students, one of the great Rabbis of Bne Brak[228A], Yisrael Eliyahu Weintraub[228B], came to our yeshiva – Marbeh Torah[228C] – to speak on some of the ideas of Chanukah. Rabbi Weintraub had been a student of Rav Yitschok Hutner[228D] , Z"TsL, in New York City several decades before and spoke English very well. He was also a talmid muvhak - close student - of Maran HaGaon HaRav Eliezer Menachem Mann Shach ZT"L[228E] and was renowned for his knowledge of Kabala. When he spoke at the Kollel Chazon Ish[228F] – with space for more than five hundred people learning at the same time – it was packed out into the streets. When he spoke at our yeshiva, there were only about 50 there to hear – but that was more than the entire student body. One of the key things that he said was "I don't like the word Chiloni. All Jews are Kodesh." He did not stress the difference between tzur and chol – between rock and sand – as I have done here. But the message was clear. The students took heed and stopped using such language to refer to their fellow Jews.

Kodesh means separated and dedicated for a specific purpose. We think of Shabbes as Kodesh and the six days as Chol. A better image is to think of the pattern of the six days and Shabbes being imprinted on a stream of time that would otherwise be formless and purposeless. The pattern of the six days and Shabbes transforms this purposeless, formless time into time in the image of God – time with a pattern and purpose. The whole of time becomes Kodesh when we establish its purpose and dedicate it to service in the image of God.

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[227] הַצּוּר תָּמִים פָּעֳלוֹ כִּי כָל-דְּרָכָיו מִשְׁפָּט אֵל אֱמוּנָה וְאֵין עָוֶל צַדִּיק וְיָשָׁר הוּא. 'The Rock, His work is perfect…' DEUT 32:4

[228] **A.** For more on life in Bne Brak, see in this sefer **AN ORIGINAL DOCTOR JOKE. B. ישראל אליהו וינטרוב (1932–2010). C.** A Yeshiva with 30-50 students under the leadership of R. Shmuel Weissman. It ran on a shoestring with almost no overhead and had class sizes as small as 7. Its Bes Medrash was in the Kollel Chazon Ish. Some classes were held in the private apartments of neighbors. **D.** יצחק הוטנר (1906–1980). **E. (1898-2001) Rosh yeshiva of Ponevezh, the leading yeshiva of Bne Brak_____ F.** The Kollel Chazon Ish – in the heart of Bne Brak – is named after the Chozon Ish – R. Avrohom Yeshaya Karelitz, (1878-'53), who is generally regarded as the spiritual founder of the city. With thousands of s'form on the open shelves, it's open 24X7 with no security guards & no clerks to check books in or out. The students of Marbeh Torah daven and learn in the Kollel Chazon Ish. The talk cited here took place in a nearby building.

WITH ALL YOUR HEART:

INSIGHT ON THE SHEMA FROM PERKEI AVOS[229]

Each day, twice a day, we say the Shema[230] –from the age of continence – usually about two or three – to the age at which we are no longer able to understand its meaning. Each time we repeat the Shema, we say that we should love God "with all your heart." But what does 'all your heart' mean? In Perkei Avos 2:12-13 we read[231]:

12. He said to them, Go and see which is the good way that a man should cleave to.	אמר להם, צאו וראו איזו היא דרך טובה שידבק בה האדם.
Rabbi Eli'ezer said, A good eye: R. Jehoshua' said, A good friend: R. Jose said, A good neighbor: R. Shimon said, He that foresees what is to be: R. El'azar said, A good heart.	רבי אליעזר אומר, עין טובה; רבי יהושוע אומר, חבר טוב; רבי יוסי אומר, שכן טוב; רבי שמעון אומר, הרואה את הנולד; רבי אלעזר אומר, לב טוב.
He said to them, I approve the words of El'azar ben 'Arak rather than your words, for his words include your words.	אמר להם, רואה אני את דברי אלעזר בן ערך מדבריכם, שבכלל דבריו דבריכם.
13. He said to them, Go and see which is the evil way that a man should shun.	חזר ואמר להם, צאו וראו איזו היא דרך רעה שיתרחק ממנה האדם.
R. Eli'ezer said, An evil eye: R. Jehoshua' said, An evil companion: R. Jose said, An evil neighbor: R. Shimon said, He that borrows and doesn't repay. He that borrows from man is the same as if he borrowed from God (blessed is He) For it is said, The wicked borrow, and don't repay, but the righteous is merciful and gives: (Psalms 47:21) R. El'azar said, An evil heart.	רבי אליעזר אומר, עין רעה; רבי יהושוע אומר, חבר רע; רבי יוסי אומר, שכן רע; רבי שמעון אומר, הלווה ואינו משלם--אחד לווה מן האדם כלווה מן המקום ברוך הוא, שנאמר "לווה רשע, ולא ישלם; וצדיק, חונן ונותן" (תהילים לז,כא); רבי אלעזר אומר, לב רע.
He said to them, I approve the words of El'azar ben 'Arak rather than your words, for your words are included in his words.	אמר להם, רואה אני את דברי אלעזר בן ערך מדבריכם, שבכלל דבריו דבריכם.

It is obvious that, except for R. Shimon's statements, all of the expressions are pairs – where the expression in verse 13 is the negative of the corresponding expression in verse 12. R. Shimon's first statement "He who foresees what is to be." is paired with

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[229] **From #29, p67 in Sefer Chidushei Torah**

[230] **Deut. 6:4–9 . It begins with the words** " Shema Yisroel"" Hear , O Israel" שְׁמַע, יִשְׂרָאֵל

[231] **The "He" in the quote is Rabban Yochanan ben Zakkai.[He *"lived altogether a hundred and twenty years. For forty years he was in business, forty years he studied, and forty years he taught"*... [Rosh Hash. 31b]. He was a key leader at the time of the destruction of the Temple.]**

"He who borrows and doesn't repay." The classic commentators say that one who borrows and doesn't return does not foresee that people will not lend to him in the future. However, all of the other statements concern sustained behaviors or basic character traits. A single instance of borrowing and not returning seems to be just foolish. Why wouldn't it be better just to pair "One who avoids foolish things." with "One who does not avoid foolish things."?

The person who borrows and doesn't return here is not a person who makes a single foolish mistake. This person borrows and doesn't return repeatedly – fully anticipating that they will be able to return. They may have plans for projects that they think will actually be beneficial -- that will pay off -- and that will enable them to repay – with profit to all. The difficulty is that they don't do their calculations well. They are carried away with optimism and infect others with that optimism – based on poor calculations. "He that foresees what is to be" does his calculations well and is not carried away by optimism.

This shows that, in the Torah way of thinking, a good heart includes the ability to think clearly -- to do the necessary calculations accurately and to remain level headed in the face of the results of one's analysis.

When we speak of "all your heart" in the Shema, we include the cultivation and use of clear thinking and accurate calculation. It isn't enough to feel like doing the right thing. We must know what we are doing. Otherwise, we not only waste our own resources and accomplish nothing but we squander the resources of the community – or even make things worse.

When those who were spiritually far removed from the Torah world – and from the Jewish people[232] – translated the Shema into Greek, they didn't feel it was enough to say "with all your heart." To these cultural Greeks – including many Hellenized Jews -- a good heart didn't include the ability to think clearly. Where the Shema is found in Greek writings from the decades after the destruction of the Temple, the authors and their readers were so far removed from Jewish tradition that they had to add the expression "with all your mind."[233] They felt that they had to do this even with a sentence that Jews had been saying every day twice a day all of their sentient lives. This is a general indication of how far removed the rest of these Greek writings are from a true account of what they purport to record[234].

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[232] This cultural separation may've come from Roman persecution of the Jews at this time. It was safer for non-Jews to remove Hebrew writings from their places of worship – resulting in a disconnect from both Hebrew & the spiritual life of the Jews .

[233] Standard Text of the Septuagint, Deut 6:5.: καὶ ἀγαπήσεις Κύριον τὸν Θεόν σου ἐξ ὅλης τῆς καρδίας σου καὶ ἐξ ὅλης τῆς ψυχῆς σου καὶ ἐξ ὅλης τῆς δυνάμεώς σου. [...ólis tís kardías sou kaí ex ólis tís psychís sou kaí ex ólis tís dynámeós sou. ...*all your heart and with all your soul and with all your strength*.] All three parallel verses in the Greek Scriptures that include the phrase "thou shalt love the Lord thy God", have the Greek word for mind inserted. **A.** Mt. 22:37-9: ...Ἀγαπήσεις κύριον τὸν θεόν σου ἐν ὅλῃ τῇ καρδίᾳ σου καὶ ἐν ὅλῃ τῇ ψυχῇ σου καὶ ἐν ὅλῃ τῇ διανοίᾳ σου …thou shalt love the Lord thy God with all thy heart, and with all thy soul, and with all thy *[dianoía]* mind. This is the first and great commandment. And the second *is* like unto it, Thou shalt love thy neighbour as thyself. **B.** Mk.12:30-1: καὶ ἀγαπήσεις κύριον τὸν θεόν σου ἐξ ὅλης καρδίας [kardías] σου καὶ ἐξ ὅλης τῆς ψυχῆς [psychis] σου *καὶ ἐξ ὅλης τῆς διανοίας [dianoías] σου* καὶ ἐξ ὅλης τῆς ἰσχύος [ischýos]*.....and with all thy mind and with all thy strength… this is the first commandment. And the second is like, namely this, Thou shalt love thy neighbour as thyself. There is none other commandment greater than these.*] **C.** Lk. 10:27: "…thou shalt love the Lord thy God with all thy heart, and with all thy soul, and with all thy strength, and with all thy mind [διανοίας]; and thy neighbour as thyself."*[Found in English, word: metanoia= change of mind, repentance; Gk: μετάνοια]*

[234] When I was a teenager I noticed the extra word 'mind' in a classic English translation of these Greek writings that I found in the garbage. I assumed that, since these were supposed to be accounts of a Jewish leader speaking to Jews, that the original would have been in Hebrew. So I looked for the Hebrew original. When I found that the original was actually in Greek, I understood that the rest of these writings were not a reliable account of those times.[From #100, not yet written.]

AND THEIR CRY CAME UP UNTO GOD[235]

We say that when we, בְּנֵי-יִשְׂרָאֵל -Bne Yisroel, were in Mitzrayim, we fell to the 49th level of tuma – of spiritual pollution. We also say that we were saved from descending to the 50th level – the point of no return – by three things: we kept our names, our clothing and our language[236]. Yet, at Shemos, 2:23 before the worst oppression had been heaped upon us, we read:

וַיְהִי בַיָּמִים הָרַבִּים הָהֵם, וַיָּמָת מֶלֶךְ מִצְרַיִם, וַיֵּאָנְחוּ בְנֵי-יִשְׂרָאֵל מִן-הָעֲבֹדָה, וַיִּזְעָקוּ; וַתַּעַל שַׁוְעָתָם אֶל-הָאֱלֹהִים, מִן-הָעֲבֹדָה.

"…and the children of Israel sighed by reason of the bondage, and they cried, and their cry came up unto God by reason of the bondage."

It does not say here that we cried out to Hashem[237]. In Bamidbar 20:15-16, however, a different expression is used:

וַיֵּרְדוּ אֲבֹתֵינוּ מִצְרַיְמָה, וַנֵּשֶׁב בְּמִצְרַיִם יָמִים רַבִּים; וַיָּרֵעוּ לָנוּ מִצְרַיִם, וְלַאֲבֹתֵינוּ. וַנִּצְעַק אֶל-יְהוָה, וַיִּשְׁמַע קֹלֵנוּ, וַיִּשְׁלַח מַלְאָךְ, וַיֹּצִאֵנוּ מִמִּצְרָיִם; וְהִנֵּה אֲנַחְנוּ בְקָדֵשׁ, עִיר קְצֵה גְּבוּלֶךָ.

"…the Egyptians dealt ill with us, and our fathers; and when we cried unto the LORD, He heard our voice, and sent an angel, and brought us forth out of Egypt.."

Also, at Devarim 26:6-7, in recounting the same events, the Torah follows and builds on the language of Bamidbar – not the original language in Shemos:

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[235] **From #25, p60, Sefer Chidusei Torah.**

[236] **Midrash Vayikra Rabbah 32:5 for keeping names and language. The Ritva (in his commentary to the Hagada), knew a midrash that Bne Yisrael preserved their clothing and explains it to mean that they wore tzitzit and were thus immediately recognized as Jews by their special garments.** http://www.vbm-torah.org/archive/mitzva/13shemot.doc.

[237] **Nonetheless, we read, first in the next verse, Shemos 2:24;**

וַיִּשְׁמַע אֱלֹהִים, אֶת-נַאֲקָתָם; וַיִּזְכֹּר אֱלֹהִים אֶת-בְּרִיתוֹ, אֶת-אַבְרָהָם אֶת-יִצְחָק וְאֶת-יַעֲקֹב.

And God heard their groaning, and God remembered His covenant with Abraham, with Isaac, and with Jacob.

and then, in Shemos 6:5:

וְגַם אֲנִי שָׁמַעְתִּי, אֶת-נַאֲקַת בְּנֵי יִשְׂרָאֵל, אֲשֶׁר מִצְרַיִם, מַעֲבִדִים אֹתָם; וָאֶזְכֹּר, אֶת-בְּרִיתִי.

And moreover I have heard the groaning of the children of Israel, whom the Egyptians keep in bondage; and I have remembered My covenant.

This shows that God hears the cries of the oppressed –even when they are not addressed to Him and that this unaddressed cry represented the Jewish People at the time.

וַיָּרֵעוּ אֹתָנוּ הַמִּצְרִים, וַיְעַנּוּנוּ; וַיִּתְּנוּ עָלֵינוּ, עֲבֹדָה קָשָׁה. וַנִּצְעַק אֶל-יְהוָה אֱלֹהֵי אֲבֹתֵינוּ; וַיִּשְׁמַע יְהוָה אֶת-קֹלֵנוּ, וַיַּרְא אֶת-עָנְיֵנוּ וְאֶת-עֲמָלֵנוּ וְאֶת-לַחֲצֵנוּ.

And the Egyptians dealt ill with us, and afflicted us, and laid upon us hard bondage. And we cried unto the LORD, the God of our fathers, and the LORD heard our voice, and saw our affliction, and our toil, and our oppression.

These three quotes all deal with the time before we began to leave Mitzrayim. Once we had started our actual exodus and found Pharaoh's army behind us and the sea in front of us – seemingly blocking our path forward – then our attitude appears unambiguous. At Shemos 14:10 we have:

וּפַרְעֹה, הִקְרִיב; וַיִּשְׂאוּ בְנֵי-יִשְׂרָאֵל אֶת-עֵינֵיהֶם וְהִנֵּה מִצְרַיִם נֹסֵעַ אַחֲרֵיהֶם, וַיִּירְאוּ מְאֹד, וַיִּצְעֲקוּ בְנֵי-יִשְׂרָאֵל, אֶל-יְהוָה.

"…and they were sore afraid; and the children of Israel cried out unto the LORD."

Why should it be that in the first verse cited, Shemos 2:23, we did not appear to cry out to God, but in the other verses we clearly did? Further, if we did in fact preserve our names, clothing and language, we'd expect that we would have preserved the name and language for praying -- for crying out -- to God. That God's name is missing from our t'fillas in Shemos 2:23 is even more puzzling.

The explanation becomes clear when we realize that something remarkable happened between our prayers in Shemos 2:23 and the circumstances of the other three verses. At Shemos 13:18 we learn:

וַיַּסֵּב אֱלֹהִים אֶת-הָעָם דֶּרֶךְ הַמִּדְבָּר, יַם-סוּף; וַחֲמֻשִׁים עָלוּ בְנֵי-יִשְׂרָאֵל, מֵאֶרֶץ מִצְרָיִם.

"…and the children of Israel went up armed out of the land of Egypt."

Though here the translation has "went up armed", one of the traditional translations looks at the root of the word וַחֲמֻשִׁים that is here translated as "armed" and reads instead "a fifth." A fifth of what? Only a fifth of the us – The Jewish People in Mityzraim -- actually left. The other 80% of us wanted to stay. Those 4/5ths died and were buried in the Plague of Darkness[238].

From this we can learn that at the time we were in Mitzraim and actually cried by reason of our bondage, the great majority of us did not know the name of God or how to pray. We had lost our language, our clothing and even our names. Most of us identified with the Mitzrim and could not see going out – even from such an oppressive society – to follow Moshe into the Desert. Those of us who actually reached the Yam Suf and saw Pharaoh and his army coming after them were the fifth who wanted to leave. This fifth of us preserved their language, clothing and names – including the name of God and how to pray. When the story of the oppression in Mizraim is recounted in Bamidbar and Dvorim, it is told over from the perspective of those of us who actually left. These verses say:

וַנִּצְעַק אֶל-יְהוָה " we cried unto the Lord"

[238] **Rashi gives "armed" as the first interpretation and then adds: "Another interpretation is 'divided by five' – that one in five went out and four fifths died during the [plague of] … darkness." from Rashi and Midrash Tanchuma, Beshallach 1.** _____ ___

In contrast, in Shemos 2:23, we read: וַיֵּאָנְחוּ בְנֵי-יִשְׂרָאֵל מִן-הָעֲבֹדָה, וַיִּזְעָקוּ …

"and the children of Israel sighed by reason of the bondage, and they cried"

So it was those of us who preserved their names, language and clothing who actually went out of Mitzraim while those who didn't preserve these cultural identifiers were ultimately lost.[239]

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[239] **A. There is also the recounting these events by the Prophet Samuel, at 1 Sam 12:8**

כַּאֲשֶׁר-בָּא יַעֲקֹב, מִצְרַיִם--וַיִּזְעֲקוּ אֲבוֹתֵיכֶם, אֶל-יְהוָה, וַיִּשְׁלַח יְהוָה אֶת-מֹשֶׁה וְאֶת-אַהֲרֹן וַיּוֹצִיאוּ אֶת-אֲבֹתֵיכֶם מִמִּצְרַיִם, וַיֹּשְׁבוּם בַּמָּקוֹם הַזֶּה.

"When Jacob was come into Egypt, then your fathers cried unto the LORD, and the LORD sent Moses and Aaron, who brought forth your fathers out of Egypt, and they were made to dwell in this place." **[Emphasis added.]**

B. As a boy of five I lived in the East Tremont section of the Bronx – just west of the Bronx Zoo. There were so many traditional Jews in the area that many of the signs on the stores were in Hebrew letters. I actually learned the Aleph-Bes at the age of five from these signs. At the same time, the signs of Torah were almost completely lacking. I don't remember seeing anyone who looked so noticeably different from the non-religious Jews or from the non-Jews that it caught my attention. None wore tsitsis out, none had noticeable peyos. Almost none had beards and no one at all ever said "Good Shabbes" to me. Almost all of them sent their children to the public schools – where I went as well.

In a society that taught its children in its public schools that they had freedom of religion, speech, press and assembly, parents were confronted with a peculiar choice. They could send their children to the free, tax supported, public school, or they could pay what would often have been a substantial part of their usually meager earnings to send their children to a school they actually preferred. Most parents chose the former -- with predictable results. In less than a generation, the tradition – the way of life – the Torah – that they had treasured for centuries, was all but lost.

In Williamsburg, by contrast, the parents would do almost anything to avoid sending their children to the public schools. They made large sacrifices to establish schools where the children would be educated in a Torah environment. Their children not only remained Shomer Mitzvahs – but increased in numbers and in the power of their example to reach out to others. Today in Williamsburg almost every store of every kind is Shomer Shabbes and the streets are full of children. [See footnote 657e, p. 169, about R. Chiyya's schools.]

C. The teaching of the "3 R's" in "free" schools seems benign enough – but the agenda of those who usually provide the support for the "free" schools usually includes a 4th R—Religion. or its ideological equivalent. A key to appreciating this comes from understanding what happened in Massachusetts in the mid-19th century. The overwhelmingly Protestant citizenry - whose ancestors had come in the decades or even centuries before were confronted by tens of thousands of Roman Catholic immigrants who had fled to the Boston area in the wake of the devastating Irish Potato Famine [1845-1852]. A large part of the impetus for the creation & support for "free" public schools in Massachusetts in this time frame came from those who, effectively, wanted to take the Roman Catholic children away from their parents. The local Protestants feared that the Roman Catholics would be agents of the Pope in Rome & do his bidding in local elections – so that the rights of Protestants would soon come to be constrained. [See 1. [U.S. [Supreme Court] Amicus.Brief, 1999. Guy MITCHELL, et al., Petitioners, v. Mary L. HELMS, et al., Respondents. #98-1648. 8/19/99. Brief of the Becket Fund For Religious Liberty As Amicus Curiae In Support Of Petitioners [12 pages] _____; 2. Anti-Catholicism and the History of Catholic School Funding *by Robert P. Lockwood (2/2000)* Catholic League for Religious and Civil Rights: White Papers and Essays/Education _____ ; 3. "The Little Red Schoolhouse: Pierce, State Monopoly of Education and the Politics of Intolerance." Paula Abrams, Constitutional Commentary [V. 20:61, 61-96, 2003]; 4. "The-Protestant crusade 1800-1860" Ray Allen Billington 1938, 528 pages ; 5. Official Report of the Debates and Proceedings in the state convention, Assembled May 4th, 1853, To Revise and Amend The Constitution of the Commonwealth of Mass. V.3 Boston:. 1853. See in particular, the comments of Rev. Samuel Kirkland Lothrop, [1804-1886, Pastor, Unitarian Brattle Sq. Church in Boston, D. D. Harvard, 1852] on p. 617: "I wish all children to be educated, not as members of religious sects, not as belonging to one religious party or another, but to come together on one common ground, as children of the State…" 6. "…educational and cultural diversity… is a way of promoting our long term survival." ASA, Correspondence between the author & Robert C. Post, [16th Dean of Yale Law School, [2009 - 2017] & at the time, Sol & Lillian Goldman [now 11/13/17 Sterling] Prof. of Law, Yale Law School [vantran613@yahoo.com & robert.post@yale.edu] 4/17, 4/18 & 4/25/2012.

In more recent times, large communities of Jews – such as the 700,000 Jews who lived in the Bronx shortly after WWII - have disappeared almost completely. They made an effort to be like the people around them. They had English names, no tsitsis out, no beards and no "Good Shabbes" greetings to people on the street.

In Williamsburg, Brooklyn, by contrast, we preserved all of these things. In the same time frame that saw our community in the Bronx all but disappear, our community in Williamsburg has grown enormously in both numbers and in Derech HaShem.

After writing this, I recognized a possible contradiction in the verses of Shemos 4:29-31.

וַיֵּלֶךְ מֹשֶׁה, וְאַהֲרֹן; וַיַּאַסְפוּ, אֶת-כָּל-זִקְנֵי בְּנֵי יִשְׂרָאֵל. וַיְדַבֵּר אַהֲרֹן--אֵת כָּל-הַדְּבָרִים, אֲשֶׁר-דִּבֶּר יְהוָה אֶל-מֹשֶׁה; וַיַּעַשׂ הָאֹתֹת, לְעֵינֵי הָעָם. וַיַּאֲמֵן, הָעָם; וַיִּשְׁמְעוּ כִּי-פָקַד יְהוָה אֶת-בְּנֵי יִשְׂרָאֵל, וְכִי רָאָה אֶת-עָנְיָם, וַיִּקְּדוּ, וַיִּשְׁתַּחֲווּ.

And Moses and Aaron went and gathered together all the elders of the children of Israel. And Aaron spoke all the words which the LORD had spoken unto Moses, and did the signs in the sight of the people. And the people believed; and when they heard that the LORD had remembered the children of Israel, and that He had seen their affliction, then they bowed their heads and worshipped.

This is before any of the plagues – when all of us in the generation that seemingly didn't know God's name were still alive. Here it says: "the people believed …they heard that the Lord had remembered… and they...worshipped." **However, it doesn't say "all the people" – which occurs seven times in Shemos in connection with actions of the Jewish People – six of them favorable[240]. "The people" in this context is distinguished from "the children of Israel" and refers to the elders and others nearby. It is also only these who were addressed and heard anything. We may understand that it was the elders and others nearby who believed and bowed. Even when they bowed and worshiped, it does not say that they only worshiped God and rejected idolatry.**

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[240] **Shemos 11:8 "…and all the people that follow thee…"**

Shemos 18:21 "…thou shalt provide out of all the people able men…"

Shemos 19:8 "..And all the people answered together, and said: 'All that the LORD hath spoken we will do…"

Shemos 20:14 "…And all the people perceived the thunderings, and the lightnings, and the voice of the horn, and the mountain smoking; and when the people saw it, they trembled, and stood afar off."

Shemos 24:3 "And Moses came and told the people all the words of the LORD, and all the ordinances; and all the people answered with one voice, and said: 'All the words which the LORD hath spoken will we do.'

Shemos 32:3 "And all the people broke off the golden rings which were in their ears…"[not favorable.]

Shemos 33:8 "…when Moses went out unto the Tent, that all the people rose up, and stood, every man at his tent door…"

"JUSTICE, JUSTICE..."

PUBLIC TRANSPORTATION & THE TALIBAN[241]

II GATEWAY TO ECONOMICS, PUBLIC POLICY AND HISTORY

The expression, צֶדֶק צֶדֶק תִּרְדֹּף "Justice, justice shall you seek...." has been at the center of many commentaries. It is part of a paragraph that appears to deal exclusively with practical aspects of courts and judges.

שֹׁפְטִים וְשֹׁטְרִים, תִּתֶּן-לְךָ בְּכָל-שְׁעָרֶיךָ, אֲשֶׁר יְהוָה אֱלֹהֶיךָ נֹתֵן לְךָ, לִשְׁבָטֶיךָ; וְשָׁפְטוּ אֶת-הָעָם, מִשְׁפַּט-צֶדֶק. לֹא-תַטֶּה מִשְׁפָּט, לֹא תַכִּיר פָּנִים; וְלֹא-תִקַּח שֹׁחַד--כִּי הַשֹּׁחַד יְעַוֵּר עֵינֵי חֲכָמִים, וְיסַלֵּף דִּבְרֵי צַדִּיקִם. צֶדֶק צֶדֶק, תִּרְדֹּף--לְמַעַן תִּחְיֶה וְיָרַשְׁתָּ אֶת-הָאָרֶץ, אֲשֶׁר-יְהוָה אֱלֹהֶיךָ נֹתֵן לָךְ.

Judges and officers shalt thou make thee in all thy gates, which the LORD thy God giveth thee, tribe by tribe; and they shall judge the people with righteous judgment. Thou shalt not wrest judgment; thou shalt not respect persons; neither shalt thou take a gift; for a gift doth blind the eyes of the wise, and pervert the words of the righteous[242]. **Justice, justice shalt thou follow**, that thou mayest live, and inherit the land which the LORD thy God giveth thee. **[DEV. 16:18-20]**

Among the traditional interpretations which we might explore here are:

1. **justice should be pursued with justice**
2. **we should seek out the primary source of justice in our Land, and**
3. **we should be conscious that there are two courts of justice operating at all times – the Heavenly Court and the Human Court.**

However, rather than focusing on these more usual areas of interpretation, we will look at something that is generally left out entirely.[243]

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[241] This is not in final form and requires more research on the traditional interpretations of the passages cited. From # 69 (p. 13 of Sefer Chidushei Torah) on obligation to avoid bal tashchis & #116.

[242] **A** This expression & Avroham Avinu's refusal to accept any reward from the King of Sodom [Bir.14:21-24], led me to refuse to accept a Federally supported university scholarship when I was 17 years old (5729—'69). At the same time that I was refusing to accept Federal money for ethical reasons – the Federal promotion of the War in Vietnam -- Yeshiva U. transformed itself from a Torah centered school into a secular institution in order to get more money form the same source. This change was partly an attempt to offset the effects of the newly instituted, highly subsidized "open admissions" policy at the City U. of NY.

The parsha –Shoftim – that begins by telling us how a gift will "blind the eyes of the wise..." ends with the Mes Mitvah – the person found slain in the field. The systems that work on bribery & gifts treat the Mes Mitzvah as an opportunity to grab the body of a friendless & destitute person & turn it into the study object for medical students in anatomy class. The votes of the well-organized doctors outweighed the votes of the friendless and destitute. The result is a form of "social cannibalism" – socially organized system where some – anatomy profs. & students – "eat" – earn their livelihood or grades – by consuming the bodies of others – their victims. [The connection between the beginning & end of the parsha was made & said over the 1st time at AISH HaTorah, Yerush. Shoftim, 5774]

The same rabbinic authorities at YU who promoted, accepted or acquiesced to the change in funding acted similarly with regard to the use of Jewish bodies in medical education. Hundreds of bodies of Jews were dissected for medical education at YU's Albert Einstein Col. of Med. under the guidance of these rabbis. The potential of money from 'interested sources' to "*blind the eyes of the wise*" [Dev.20:19] is discussed below. Our sages give a similar warning in Perkei Avos 6:9 – where R. Yossei ben Kisma refuses to be a rabbi for money.

See, in this sefer: DOCTORS IN GEHENOM. See also the author's sefer A Sign Forever, where the issue is raised in several places. The Yeshivas of Reb. Dovid Soloveitchik in Yerushalaim only accept money from religious Jews – for similar reasons. For examples of how Tsadikim avoided the taint of ill gotten gain, see footnote 657, in this sefer.

[242] **B** It isn't only such overt things that 'blind the eyes of the wise...', community leadership is inherently difficult: **[WORK IN PROGRESS]**

"אֲשֶׁר נָשִׂיא יֶחֱטָא וְעָשָׂה אַחַת מִכָּל־מִצְוֹת יְהוָה אֱלֹהָיו אֲשֶׁר לֹא־תֵעָשֶׂינָה בִּשְׁגָגָה וְאָשֵׁם:אוֹ־הוֹדַע אֵלָיו חַטָּאתוֹ אֲשֶׁר חָטָא בָּהּ וְהֵבִיא אֶת־קָרְבָּנוֹ שְׂעִיר עִזִּים זָכָר תָּמִים:

When a ruler sinneth, and doeth through error any one of all the things which the LORD his God hath commanded not to be done, and is guilty: if his sin, wherein he hath sinned, be known to him, he shall bring for his offering a goat, a male without blemish." **[Lev. 4:22-3]**

"The Sins of a Leader" OU Torah, Rabbi Jonathan Sacks on Parsha:____ __ __ "Ovadiah Sforno cites the phrase "But Yeshurun waxed fat, and kicked" (Deut. 32: 15). Those who have advantages over others, whether of wealth or power, can lose their moral sense. Rabbenu Bachya agrees, suggesting that rulers tend to become arrogant and haughty.

R. Elie Munk, citing the Zohar, offers a second explanation. The High Priest and the Sanhedrin were in constant contact with the holy. They lived in a world of ideals. The king or political ruler, by contrast, was involved in secular affairs: war and peace, the administration of government, and international relations. He was more likely to sin because his day to day concerns were not religious but pragmatic.

R. Meir Simcha ha-Cohen - the "Ohr Somayach"- [1843–1926, Rabbi for ~40 yrs, [together with R. Yosef Rosen, the Rogatchover Gaon, 1858 – 1936] of Dvinsk, Latvia, pop. 60-110K, ≥40% Jews], points out that a king was especially vulnerable to being led astray by popular sentiment. Neither a priest nor a judge in the Sanhedrin were answerable to the people. ...Doing what the people want is not always doing what God wants. ...Thus...a political leader is more exposed to temptation and error than a priest or judge. [Meshekh Chokhmah to Lev. 4: 21-22.]

Yochanan ben Zakkai summed it up with a brilliant double-entendre on the word asher, in "When a leader sins." He relates it to the word ashrei, "happy," and says: Happy is the generation whose leader is willing to bring a sin offering for his mistakes" " HORAYOS, 10A-11A, Look at original sources – use direct quotes; relate this to situation of:

[242] **C** Mordechai at Esther 10:3 ... וְרָצוּי לְרֹב אֶחָיו ... and accepted of the multitude of his brethren" not loved by all -- Purim Torah: Mordechai decends into Politics & Haman is elelvated to the World of Truth.

[243] An even more unusual Astronomical Interpretation is given on p. 69.

There is only one other possuk, DEVARM 25:15, that also has the word צֶדֶק doubled. It also ends with a very similar phrase about inheriting the Land:

אֶבֶן שְׁלֵמָה וָצֶדֶק יִהְיֶה-לָּךְ, אֵיפָה שְׁלֵמָה וָצֶדֶק יִהְיֶה-לָּךְ--לְמַעַן, יַאֲרִיכוּ יָמֶיךָ, עַל הָאֲדָמָה, אֲשֶׁר-יְהוָה אֱלֹהֶיךָ נֹתֵן לָךְ.

A perfect and just weight shalt thou have; a perfect and just measure shalt thou have; that thy days may be long upon the land which the LORD thy God giveth thee.

Not only do we have the word צֶדֶק – just – appearing twice here, but in both cases the word appears to be unnecessary in its immediate context[244]. Before each appearance of צֶדֶק we have the word שְׁלֵמָה -- perfect or complete. If we already know that the weights and measures must be perfect and complete, why do we need the word צֶדֶק? It leads us to ask where else we have seen צֶדֶק duplicated – and links this possuk with: צֶדֶק צֶדֶק, תִּרְדֹּף.

The duplication of צֶדֶק in DEVARIM 25:15 and linkage to courts in general also connects us to Vayikra, Chapter 19 -- the Holiness Chapter -- that contains the famous words "…love thy neighbor as thyself…"[245] **At Vayikra 19:35-36, where the word צֶדֶק appears four times in one possuk, the linkage with judgment is explicit:**

לֹא-תַעֲשׂוּ עָוֶל, בַּמִּשְׁפָּט, בַּמִּדָּה, בַּמִּשְׁקָל וּבַמְּשׂוּרָה. מֹאזְנֵי צֶדֶק אַבְנֵי-צֶדֶק, אֵיפַת צֶדֶק וְהִין צֶדֶק--יִהְיֶה לָכֶם: אֲנִי יְהוָה אֱלֹהֵיכֶם, אֲשֶׁר-הוֹצֵאתִי אֶתְכֶם מֵאֶרֶץ מִצְרָיִם.

Ye shall do no unrighteousness in judgment, in meteyard, in weight, or in measure. **Just** balances, **just** weights, a **just** ephah, and a **just** hin, shall ye have: I am the LORD your God, who brought you out of the land of Egypt.

That laws dealing with weights and measures are linked with laws of judgments, regulations and courts in general, suggests an additional function for these courts. We know they're empowered to act to preserve and promote justice for the society as a whole[246]. So also in matters of weights and measures, these courts must not only deal with the accuracy of standards used in the marketplace -- they must also uphold the integrity of the measurements and calculations that are used in formulating policy for whole cities or even for the whole Land.

The expressions "<u>whole</u> city" and "<u>whole</u> Land" suggest another consideration in the way these measurements must be made and applied. In Perkei Avos 3:2 we have:

רבי חנניה סגן הכוהנים אומר, הוי מתפלל **בשלומה** של מלכות--שאלמלא מוראה, איש את ריעהו חיים בלעו.

Rabbi Chanina, deputy of the high priests said: Pray for the welfare of the government, for if not for the fear of it a man would swallow his fellow alive.

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[244] DEV 25:15 is part of a paragraph, DEV 25: 13-18, dealing with just weights and measures. Like our first paragraph, it is set off by spaces from the rest of the Torah. It concludes with some very strong language.

לֹא-יִהְיֶה לְךָ בְּכִיסְךָ, אֶבֶן וָאָבֶן: גְּדוֹלָה, וּקְטַנָּה. לֹא-יִהְיֶה וָצֶדֶק לְךָ בְּבֵיתְךָ, אֵיפָה וְאֵיפָה: גְּדוֹלָה, וּקְטַנָּה. אֶבֶן שְׁלֵמָה יִהְיֶה-לָּךְ, אֵיפָה שְׁלֵמָה וָצֶדֶק יִהְיֶה-לָּךְ--לְמַעַן, יַאֲרִיכוּ יָמֶיךָ, עַל הָאֲדָמָה, אֲשֶׁר-יְהוָה אֱלֹהֶיךָ נֹתֵן לָךְ. כִּי תוֹעֲבַת יְהוָה אֱלֹהֶיךָ, כָּל-עֹשֵׂה אֵלֶּה: כֹּל, עֹשֵׂה עָוֶל.

Thou shalt not have in thy bag diverse weights, a great and a small. Thou shalt not have in thy house diverse measures, a great and a small. A perfect and just weight shalt thou have; a perfect and just measure shalt thou have; that thy days may be long upon the land which the LORD thy God giveth thee. For all that do such things, even all that do unrighteously, are an abomination unto the LORD thy God.

[245] Lev.19:18. For full vs. see: Love Thy Neighbor: Antidote To "The Tragedy Of The Commons"

[246] The enactment of the law of the prosbul under Hillel on the remission of debts prior to the Shmita year is an example of such an action by the court in Mishnaic times – two millennia ago.[see Dev., ch. 15; Mishna- Gittin 4:3, Shviis 10:3; Talmud Bav. Gittin 34b-37b

The word translated here as "for the welfare" is בשלומה. It has the root idea of complete or whole. We aren't praying for a totalitarian state, God forbid. We're not praying for the strength of the Government either – at least not the ordinary kind of strength that inspires fear. We're praying for a government that, when making judgments or formulating policy, looks to the interests of the whole of society and does not cater to only part of it. The result is that all know that the rulings of the government represent everyone. Those of us who are only marginally socially conscious – who might otherwise "*swallow his fellow alive*" – will fear[247] to go against that kind of strength.

We've already seen at Dev 20:19, above: *"neither shalt thou take a gift; for a gift doth blind the eyes of the wise, and pervert the words of the righteous."*

This may be a round-about way of saying: *Pursue Justice with Justice.*

Though we pray for a government that concerns itself with the wellbeing of the whole of society, most governments in the world -- and particularly those in the US – don't run that way. They run on gifts that are intended to enhance the interests of the gift givers – often at the expense of the community. They run on a process that would systematically blind the wise and pervert the righteous. The result is that the wise and the righteous tend to stay out of government. In their place we have a host of glib opportunists, manipulative ideologues and wealthy hobbyists[248]. The judgments of most of these people are systematically perverted. Even as they aim to help those who 'bribe' them, they produce results that are often deeply damaging to all.

A good example is local bus transportation in cities[249] [250]. If, instead of laws based on a century of bribing legislators, we had laws based on righteousness and wisdom -- laws that looked out for the community as a whole and used just and complete measures in determining the underlying reality, bus service would be completely transformed. Instead of large, slow, unresponsive, monopoly buses with a regimented labor force, we'd have largely owner-driven small vehicles -- jitneys. These jitneys would provide safe, fast, frequent, ubiquitous service at roughly today's bus fares. They would attract people out of cars and taxis in a

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[247] The word for fear מוראה also means revere. What most will revere – as they revere their parents:

(...אִישׁ אִמּוֹ וְאָבִיו תִּירָאוּ *Ye shall revere every man his mother and his father...,* LEV. 19:3) ,

the marginal socially conscious person will fear.

[248] Occasionally independently wealthy hobbyists may be both righteous and wise – & rich enough to refuse any gifts.

[249] The following analysis is based on: "Public & Private Transportation & The Shape Of Cities" in the author's sefer ובלכתך בדרך . A summary of the ~45,000 word study is available from the author at vantran613@yahoo.com.

[250] In the days of streetcars – a century ago -- governments catered to the interests of trolley companies – which gave them gifts – & the public – which benefited somewhat from having trolleys instead of horses. Trolleys were a natural monopoly. Only one trolley company could be expected to operate on any given route. Communities developed along trolley routes & many people depended on them.

With the proliferation of automobiles, governments catered to auto makers & built roads. The public also benefited: roads & cars were usually better than trolleys. The trolley companies were still able to come up with big gifts & fought to stay in business. They got laws passed prohibiting auto users from competing with them. Car drivers were forbidden to pick up passengers along a trolley route. These were the so called "anti-jitney" laws that proliferated across the US & much of the developed world in the decade following WWI. Because communities had developed along trolley lines, people continued to depend on them -- particularly those who couldn't drive or didn't have a car.

As trolleys lost market share to autos, these local communities had the clout – & gifts -- to see to it that some kind of service was maintained. The monopoly trolleys were converted into monopoly buses. Few recognized that with the proliferation of autos there was no natural monopoly for buses. The monopoly status was maintained partly as a result of social inertia. New monopoly bus services were a natural target for unionization – as monopoly trolleys had been before them. Unionized bus workers demanded higher pay. Organized local communities & real estate interests demanded continued bus service. These groups seemed to get most of what they demanded. The monopoly buses started running on large subsidies even as they lost market share to cars & taxis. Environmentalists joined the unionists & other bus supporters with well organized gift giving to cooperative legislators. They pointed out that buses consume less energy & appear to reduce traffic congestion & pollution. The buses got even bigger subsidies.

Today almost all bus service in the US & much of the developed world is heavily subsidized & provides relatively slow, infrequent & unresponsive service. In NYC – one of America's most bus intensive cities-- local buses have only a 1/6 share of their market. Compared with cars & taxis – which have the other 5/6 -- they take ~ 2X as long, door-to-door for avg. local trips. For such trips, people who value their time will avoid taking the bus.

Meanwhile "anti-jitney" laws that had been passed at the behest of the now defunct trolleys, remain on the books. There are hardly any jitney drivers to give gifts to the legislators – compared with all of the other pro-monopoly-bus interests. Today, most of the public – and most of the experts -- hardly know what jitneys were, are or could do.

virtuous circle where more demand means still more service. Without subsidies, they'd produce enormous benefits for nearly everyone, including reduced walking, waiting & riding time for existing bus riders and consumer surpluses for those who divert from cars to buses. They'd bring major reductions in traffic congestion, pollution & energy consumption [251].

The benefits of this policy applied to New York City would be about $15 billion/year [252]. This is several times the entire capital and operating costs of the monopoly buses. It's ~10× the cost of the subsidy to these buses. Most surprisingly, it is roughly thirty times the special benefits to the unionized bus workers and other interests[253] that give gifts to the legislators to maintain their monopoly and uphold the anti-jitney laws[254]. If this more open market policy were applied throughout the U.S.A., the direct benefits of the sort listed above would be ~10× as great. Worldwide, the yearly benefits would be over half a trillion dollars.

This isn't all. Jitneys in local transit would be prime markets for zero pollution engines. They'd push development of battery-electric vehicles and wind energy systems to charge them up. There may be an even greater benefit -- though it's more difficult to quantify. We'd see a wise and just policy in the interests of the community as a whole – a policy based on accurate and thorough measures of the issues at hand. We'd be able to compare this policy with what we presently have – policies based on systematic gift giving and bribe taking. We might begin to look more carefully at other polices and the government structure as a whole and make changes that could produce enormous benefits for all[255].

AN ASTRONOMICAL INTERPRETATION[256]

WORK IN PROGRESS

Tsedek צֶדֶק is also the name in the language of the Talmud for the Planet Jupiter[257]. So we could understand צֶדֶק צֶדֶק תִּרְדֹּף as an injunction to pursue a good, accurate understanding of the planet צֶדֶק: – To be able to identify it among the other planets and the fixed stars, to employ that understanding to appreciate the meaning of the "three average stars" that are the sign that Shabbes is over and, in general, to understand and draw wisdom from the special order of the starry heavens. It's also another invitation to "Count the stars …"[258] To begin, here are the names of the visible planets & their orbits.

Kochav: Mercury .39Au, 88 days, Targ. Am. V, 26.—Y. Maas. Sh.ivj 55b bot.

Noga: Venus 224.7 days, .72 AU,

KadurHaArets,Earth:93E6miles=1AU,d=8kmiles, 365.25d

Mardim: Mars: 1.52 AU, 687 days, 4.2E3miles d

Tsedek: Jupiter: 5.2 AU, 11.9 y, 87K miles d.

Shabsai: Saturn: 9.6AU, 29.5y, 36.2K miles Yoma83a;'B.Bath.90b

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[251] In 5773 (late '12) it became clear to the author that it isn't necessary to wait for the inherently corrupt legislative process to approve the policy described here. By taking advantage of the internet cellphone & GPS tech-nology, a system could be put in place without open legislative approval. Starting with Kiruvans™ & Kind-ness Cars™, self organizing Jitneys & Auto Rapid Transit [A.R.T.] would displace almost all local bus service & a large part of private car & taxi operations.

[252] Internet, cellphone & GPS, cited above, would also boost net benefits to ~$18E9/yr. For more on Kiruvans & Kindness Cars, see footnote 379.] [TM - the author.]

[253] Incl. taxi medallion owners & various politicians, bureaucrats & contractors who'd lose their positions in a competitive jitney environment. It should be clear that the essence of the jitney environment isn't vehicle ownership but competition. It's the competi-tion that leads to the small, owner-driven vehicles. Values are as calculated by the author & are as of '07, See footnote 196, for source.

[254] This isn't only an example of failing to have a just government that looks out for the whole community & applies just weights & measures in public policy. It's an example of wasting resources – bal tashchis –(ch pronounced like the ch in Chanuka). It means "Don't destroy. " :from Dt.20:19-20- where there's a prohibition on destruction of fruit trees. It may be one of the World's most ancient continuously operative laws of environmental protection.

[255] See, in this sefer: **GRASSHOPPERS AND GOVERNMENT ; SODOM ON THE HUDSON** and **THE DIMENSIONS OF WISDOM.**

See in the author's sefer ובלכתך בדרך **METAPOLICY, THE GLOBAL SOCIETY, ISRAEL & WORLD PEACE.**

[256] Thought of & said, Shabbes Shoftim 5779 by R. Y-D. Biderman

[257] Sabb. 156a, Gen.R. s. 43 (ref. to Is. 41:2) "The planet Tsedek shone on his (Abraham's) way;" from Jastrow, p 1463. Check original sources

[258] BIR. 15:5. [see page 18-19 in this sefer]

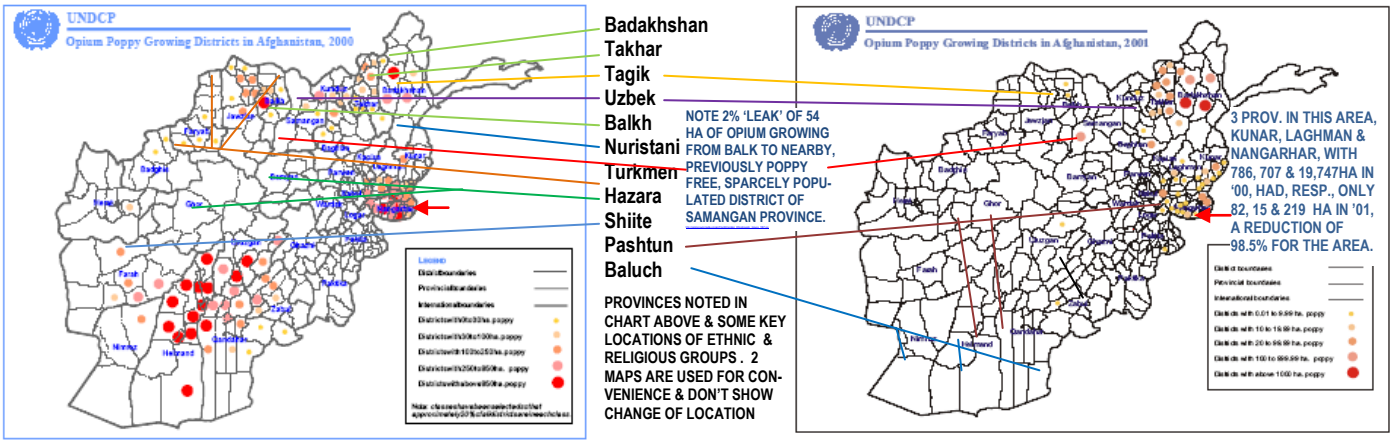
So where do the Taliban fit in to this analysis? The Taliban in their time were the pariah government of the World. Nearly every other government refused to recognize them. Even after gaining control of provinces that included over 93% of the in-country population of Afghanistan, they were kept out of the United Nations by the other governments[259]. The irony here – and the reason the Taliban are mentioned in a chidush on "just" government – is that the Taliban did not take bribes.

How can we say this? As can be seen in the table and two maps[A] below, between the spring of '00 & the spring of '01, the Taliban reduced opium poppy growing in their domain by 98.7%. They eliminated a crop that had yielded close to 70% of the world's non-medical (really, non-UN approved)[260] opium. They did it without any reports of executions, maimings or floggings.

HECTARES OF OPIUM POPPY CULTIVATION IN AFGHANISTAN BY PROVINCE & GOVERNANCE: 1994-2012
Data from United Nations Office of Drugs and Crime

YEAR / REGION	1994	1995	1996	1997	1998	1999	2000	2001	2001/2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Badakhshan[A]	1,714	2,966	3,230	2,902	2,817	2,684	2,458	6,342	2.580	8,250	12,756	15,607	7,370	13,056	3,642	200	557	1,100	1,705	1,927
Takhar[B]	0	0	0	0	0	201	647	211	0.326	788	380	762	1,364	2,178	1,211	C	C	C	C	C
Balkh	0	0	1,065	710	1,044	4,057	2,669	4	0.001	217	1,108	2,495	10,837	7,100	C	C	C	C	C	C
Taliban in 2001	69,702	50,793	53,579	55,515	60,810	88,024	78,928	1,053	0.013	65,007	67,346	114,631	95,266	149,746	188,147[C]	156,800[C]	122,433[C]	121,900[C]	129,295[C]	152,073[C]
ALL AFGHANISTAN[D]	71,416	53,759	56,827	58,417	63,627	90,909	82,033	7,606	0.093	74,045	80,482	131,000	104,000	165,000	193,000[C]	157,000[C]	123,000[C]	123,000[C]	131,000[C]	154,000[C]

A NOT CONTOLLED BY TALIBAN B CONTESTED IN 2000-01 C PROVINCES WITH ≤100 HA OF OPIUM ARE CONSIDERED "OPIUM FREE" BY UN D 2004-2012 TOTALS ROUNDED IN ORIGINAL



They also did it across ethnic, religious and geographic lines. In Balkh, the home province of their defeated enemy, General Dostum, they reduced it by 99.9%. They did it on the basis of consensus of the elders – the wise and the just – connected with the mosques throughout their domain. Also, as shown on the next page, in the year before the ban was publicly announced, the farm-gate price of opium in Afghanistan remained extremely low and flat. This showed that the Taliban did not hoard opium in anticipation of a price rise. They were not corrupt.

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[259] They captured their 1st major city in '94. By spring '01, they had gained control of ~2/3 of Takhar Prov. and governed territory with ~95% of the in-country population. In late '01 they were driven from power in most of Afghanistan by US led forces. The rest of the story of the Taliban presented here is from **"TORAH AND THE TALIBAN",** in preparation by the author. It includes multiple links to original sources. As of Chanukah, 5775, it's ~2E5 words & 270+ p. – with much unique material-contact avshadler@yahoo.com.

[260] An example of a non-UN approved use of opium is treating diarrhea in children, etc.

A. From UNDCP: left: "Annual Opium Poppy Survey 2000", pdf p. 2) http://www.unodc.org/pdf/afg/report_2000-12-31_1.pdf ; right: "Annual Opium Poppy Survey 2001", ,pdf p. 25 http://www.unodc.org/pdf/afg/report_2001-10-16_1.pdf. [Links good as of 12/22/14]

Though they have been accused of all kinds of horrible things, their rate of judicial executions per capita/year at the time they eliminated opium poppy growing, was about 1/2 of what it was in Texas under George Bush in the same year and about 1/6 of what it was in Saudi Arabia.[261]

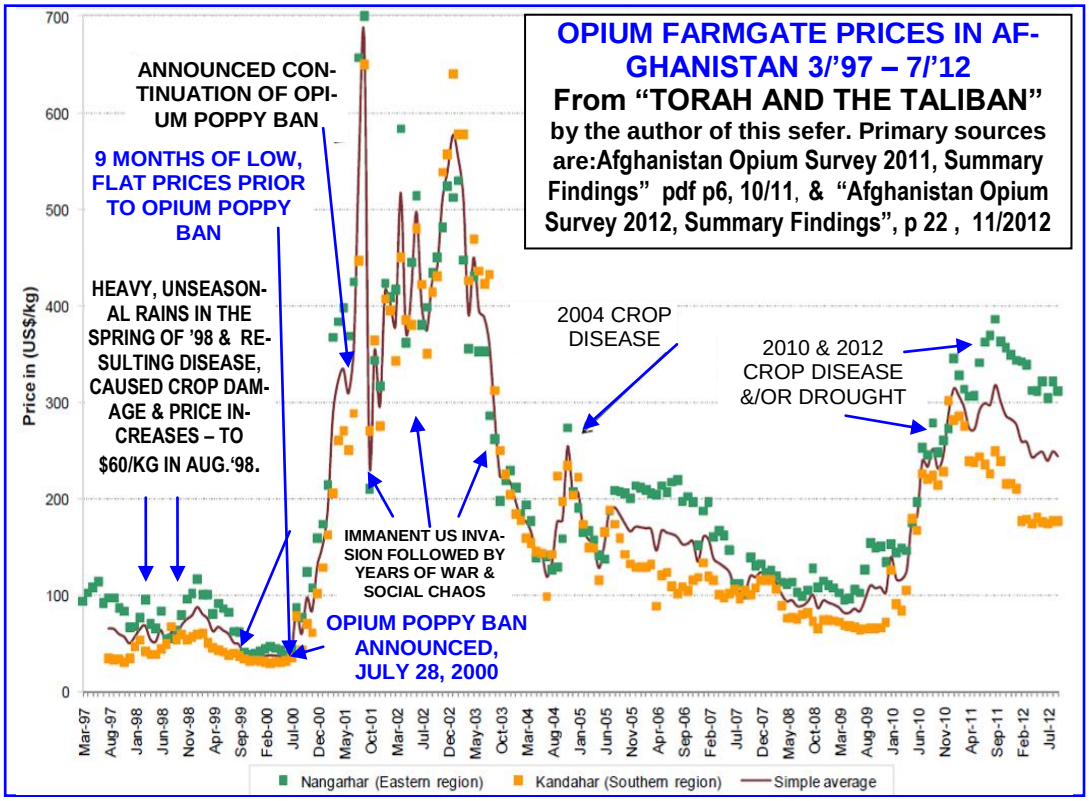
The greatest irony was that they refused to be bribed or bullied to turn over OBL without a proper judicial procedure[262]. They believed – as the Torah requires us to believe - that the Court in Heaven will punish the guilty regardless of what the courts on earth do. So they wouldn't break their rules of evidence for a temporary advantage. For standing up for their courts and refusing to be bribed, the people who claim to have better governments – the US and the Europeans -- decided, without reviewing the evidence – or perhaps regardless of it -- to begin to kill them by the tens of thousands.

The Taliban believed and lived by

... צֶדֶק צֶדֶק, תִּרְדֹּף .

II THIS COULD BE A GATEWAY TO ECONOMICS, PUBLIC POLICY, AND HISTORY:

How do governments and policies arise? How can we develop leadership and make social decisions in a way that brings out the best in all?



[261] **In Kabul, a city of roughly a million, which they controlled for 5 yrs, and in Herat, with half a million, which they controlled for six, there were no executions for adultery. Execution for adultery under their version of Moslem Law, required 4 reliable male witnesses actually observing Mr. A and Mrs. B physically going at it -- without breaking into their home. Once it became known that the Taliban were really executing people for adultery -- they executed ~20 altogether with an ~equal numbers of men and women – the more sophisticated urban adulterers stopped doing it in places where they could be observed by 4 witnesses.**

The Taliban are also accused of being terrible misogynists. Yet, their first -- and only -- execution of a woman in Kabul did not come until three years after they gained control of the city. It was also more than two years after the offense and after a reported three levels of judicial review. The woman was shot in the head in a stadium after being convicted of "beating her husband to death with a hammer as he slept." The Taliban also opened centers to teach women to be doctors & health care workers – as many of the very traditional women of Afghanistan would not allow men to touch them except in cases of a possible loss of life or limb. The ADL and Wiesenthal Center prior to 9/11/01 had nothing from the Taliban against Jews or against Israel – though both had large files of such material from OBL.

[262] **Having courts of justice with reasonable judicial procedures is one of the '7 Laws of Noah' -see footnote 150 for all 7.**

DOCTORS IN GEHENOM[263]

II Gateway to History of Science
& Medicine & History of
Classical Greece & Rome.

THIS IS STILL BEING RESEARCHED

There is a well known Mishna that states:

טוב שברופאים לגיהנם

…the best of the doctors go to Gehenom…"[264]

It has generated extensive and varied commentary by some of the greatest Meforshim over the course of a millennium—though it appears that the Talmud itself does not elaborate[265].

Professor Fred Rosner, MD, a leading expert on the medical works of Maimonides, has a whole chapter on this one statement. He restates the view of Rashi[266]: that physicians were censured for trusting too much in their craft and too little in God, failing to treat the poor and killing people with improper medicines. Other classic commentators point out that the Mishna does not say that all of the best of the Doctors go to Gehenom or that the best of the doctors are wicked. This implies that the best of the doctors are in an inherently dangerous position -- that they could go to Gehenom if they are not particularly careful in what they do[267].

None of the commentators cited by Dr. Rosner give the immediate context of the statement about physicians. The very next statement in the Mishna is:

והכשר שבטבחים שתפו של עמלק

"…and the worthiest of the butchers is
Amalek's partner[268]

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[263] From #117, this draft.

[264] Kiddushin, 4:14 82:a; Talmud Bavli:
"Rabbi Yehuda said …[in the name of אבא גוריא - Abba Guria]: Most donkey-drivers are wicked, most camel-drivers are righteous, and most sailors are pious. The best of doctors are destined for Hell…"
It should be clear that this applies when the person isn't also a ben or bas Torah -- or among the Righteous of the Children of Noah. Rambam was certainly the best of the doctors, but we don't call him Dambam -- Doctor Moshe ben Maiman – because he was a ben Torah.
In contrast to what's said about the best doctors, the Mishnah, Shabbes, 128b, refers to midwives as חכמה - chachama - a wise woman -& she may be brought from a distance on the Sabbath to aid a woman giving birth. We will see more of such favorable contrasts between midwives and "the best of the doctors" in more recent centuries.

[265] Medicine in the Bible: Selections from Classical Jewish Sources,'94/5, p230. Author, Fred Rosner, an Orthodox Jew, student of R. Moshe Feinstein, Z'TsL, MD, prof. of medicine & leading authority on the medical works of Rambam, cites R. I. Jacobovits' Jewish Medical Ethics, 1959 for noting that the Talmud doesn't comment on this.
However, among many occupations criticized by the Gemora on this Mishna, a ten fold condemna-tion– the harshest criticism by far- is reserved for Bloodletters who were often doctors or acting on their direct instructions. see also: THE QUESTION OF BLOODLETTING.

[266] Acronym of RAbbi SHlomo Itzhaki, 1040–1105CE, French rabbi, author 1st comprehen-sive commentary on the Talmud, as well as a compre-hensive commentary on the *Tanakh.*

[267] Ibid, p.233, citing R. Hanoch Zundel ben Yoseph –the Etz Yoseph -& Israel Lipschutz – the Teferes Yisroel (1792-1860)

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[268] **HOW TO MAKE PEACE & ERASE AMALEK**
II Gateway to Peace Science

R. Yitzchak Breitowitz, Shleeta, in his drosha, Leyl Shabbes Vayikra/Zachor 5779, at Ohr Someach, noted that the Sfas Emes [Yehudah Aryeh Leib Alter- יהודה אריה ליב אלתר, 4/15/1847–1/11/1905] said Amalek has a special partner: the Jewish People – that the destructive power of Amelek comes from the Amalakite quality– however small- that's within us[A]. He also pointed out that the two attacks of Amalek on the Jewish People that are recounted in Chumash occurred first, shortly after crossing the Yam Suf[B] & then shortly after Aharon's Ptera[C]. Between these, there were no attacks.

This led me to think that while Aharon was Cohen Gadol, the Jewish People were free of the inner poison that gives Amalek its strength. We learn, from Perkei Avos 1:12, the special strength of Aharon HaCohen & his students was to:

"love peace, pursue peace, love the creatures and draw them close to Torah."

הלל אומר : הוי מתלמידיו של אהרן, אוהב שלום ורודף שלום,
אוהב את הבריות ומקרבן לתורה :

So, a good, proven way to erase Amalek is to practice, promote & establish these qualities in our heart – as a People.[D]

When I mentioned this to R. Reuven Shapira, Shleeta, at seudah sheni of the same Shabbes, he noted that Aharon HaCohen's effectiveness in promoting peace as Cohen Gadol is supported by the fact that when he died "…all the house of Israel wept for Aharon 30 days.- וַיִּבְכּוּ אֶת־אַהֲרֹן שְׁלֹשִׁים יוֹם כֹּל בֵּית יִשְׂרָאֵל…"[Bm 29:20]. This means there were no cases of a person killing another unintentionally – since such a person has to flee to a place of refuge[E] and can't go home until the Cohen Gadol dies[F]. Such people wouldn't weep on an occasion that meant he was free to return home[G, H].

When told this the next week in Ohr Someyach's Bes Midrash, R S. Grafstein noted the 'Clouds of Glory - ענני כבוד' dis-

A. Base of Sfas Emes' comment may be:'When HaShem will give you rest from all of your enemies around you, wipe out Amalek… 'part of: Dv 25:17-19. suggesting source of Amalek's power is within.see _____ B. Sh. 17:8-16 C. Bm 20:28-9; 21:1-3, as explained by Rashi, based on Bamidbar Rabbah.3a D. Up to this point, said over for the 1st time at the table of R. Yisroel Dov Biderman, Shleeta, at his Shabbes seuda the same night. [see also **JUDGING PEOPLE FA-VORABLY: PART II**]
E. [In Tamuz, 5781, I was told by R. Y. Kopolovitch, son in law of R. Shapira, that the special sign of no person being killed even unintentionally, was noted by R. Meir Simcha Ha Cohen of Dvinsk [A.K.A. the Ohr Someyach](1843–1926)in his sefer "*Meshech Chochma* - משך חכמה ". See **GUILT AND INNOCENCE**, particularly at vs. Dv.19:4-6; Other verses that refer to cities of refuge including: Bm 35:6, 11-15, Josh.20:2,3; 21:13,21,27,32,38 F Bm. 35:22-25,28,32; 1Ch. 6:57,67 G. In Aharon Ha Cohen's time – cities of refuge to which unintentional/negligent killers would flee weren't yet set up & such people would flee to the camp of the Leviim. Makot 12b. H. Some who had to flee to the camp of the Leviim may have died before Aharon Ha Cohen.

This is actually a continuation of the same sentence by the same Tanna, R.Yehudah ben Ilai.[269]

What do physicians have in common with butchers and Amalek? The key is in the nature of Amalek. They didn't only attack the Jewish people when they were coming out of Mitzrayim[270]. They were not only people who denied kindness[23] and the way of God. When they killed people, according to the Midrash, they mutilated their bodies and made sport of the covenant of Avroham Avinu[271]. The Mishna is linking "the best of the doctors" with "the worthiest of the butchers" and Amalek because all three of them were known in the days of the Mishna to kill living creatures and to cut them in pieces.

There were three doctors known in Mishnaic times who were arguably the very best of all of them: Herophilus and Erasistratus of Alexandria and Galen of Pergamon and Rome [272]. The first two were the father of anatomy and his chief disciple. The third was the most acclaimed and respected doctor in his lifetime and the most influential physician for more than a thousand years thereafter.

Herophilus and his student were known for violating the long standing restrictions in the classical world on dissecting human cadavers. They reportedly dissected hundreds. This wasn't enough for them. Both of them also dissected live people. They did this in the course of scientific studies of the nature of life and the functions of the different nerves and other parts of the human body[273]. They did this with live human subjects provided by Ptolemy II Philadelphus. This was the son of Alexander the Great's General, Ptolemy I Soter. Both Ptolemies called

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appeared after Aharon's death [Ta'anis 9a____Suc.11b]. As we learn: 'Who is worthy of honor? One who honors others- אֵיזֶהוּ מְכֻבָּד,הַמְכַבֵּד אֶת הַבְּרִיּוֹת' [Perkei Avos 4:1] So, he said, the Jewish People were honored with these clouds - & protected from the arrows of Amalek - as they honored each other. They followed Aharon's way: humble to begin with & shedding honor to promote peace between disputants.

But, as a practical matter, beyond being humble, loving & pursuing peace, how do we actually make peace? We have to understand the causes of conflict –which often arise not so much from native malevolence – but from misunderstandings- from failing to see the *Shlemes* -complete picture – all sides – including the underlying reality -- of a dispute. This is what we learn from the difficulties of Yosef & his brothers & how Yaakov taught Yosef to see the *Shlemes* – not just the negative side of things. [said 1st time in Ohr Someyach Bes Med., Shab. Tzav, 5779.]

See **Doing a Mitzvah with Shlemes – in a complete way & "Justice, Justice..." Public Transportation & The Taliban**

[269] There are ~3,000 references to רבי יהודה ברבי אילעאי - Rabbi Yehudah ben Ilai -- in the Talmud Bavli, Yerushalmi and Midrashim. In Baba Kama 103b & T'murah 15b, for example:

"...[wherever we say that] 'it once happened with a certain pious man, מעשה בחסיד אחד *' he's R. Judah b. Baba or R. Judah b. Il'ai."* He used to say:

אכול בצל ושב בצל ולא תיכול אווזין ותרנגולין ויהא לבך רודף עליך

Eat onions and sit in the shade but do not eat geese and chickens or your heart will run after you. [Pes. 114a]

The words for 'onions' & 'in the shade' are spelled the same. Shade means both the contentment of your home and shade under the wings of God. He received ordination from Yehudah ben Bava just before the latter was murdered by Rome(~135CE) and lived to "a very great age." (Jewish Ency." (1906) citing: "Seder ha-Dorot, p. 169").

[270] Shem. 17:8-14; Devar 25:17-19

[271] 'Amalek cut off the male members where they had been circumcised, & cast them up towards Heaven...'Rashi:Dv.25:18. From Bam. Rabbah 13:3 & Tanchuma 9, based on word וַיְזַנֵּב. _____ Even Samuel, before hacking Agag to pieces, says to Agag: 'As thy sword hath made women childless, so shall thy mother be childless among women.'(1 Sam.15:33) When Samuel hacked Agag to pieces – instead of just killing him --it was kineged the way Agag killed others – hacking them to pieces. [For more on Amalek, Doctors [& Nazis], see footnote 25]

[272] Herophilus: 335-280 BCE; Erasistratus: 304 BCE- 250 BCE; Galen: 129 –~217 CE

[273] A. "The discovery of the body:human dissection and its cultural contexts in ancient Greece".Yale J Biol.& Med., '92, My-Jn; 65(3), p. 223-41, (72 refs). Heinrich Von Staden_____ B. Herophilus: The Art of Medicine in Early Alexandria, 666+43 p., Camb. U.Pr,'89, Ch. 6a, p.138-53, H. Von Staden affirming Herophilos practiced vivisection of criminals donated by reigning Ptolemies:Soter, Philadelphus or both._____ C. "Determinants of the revival of dissection of the human body in the Middle Ages" P. Prioreschi MD, PhD, Medical Hypotheses (2001) 56(2), 229–34 (45 references); D. "Dissection" from Wikipedia, the free encyclopedia _____E. The primary source for human vivisection under the auspices of Ptolemy II, is Roman Encyclopedist, Celsus [c. 25 BCE – c. 50 CE]. Other sources are given on p.144, footnote 10, of B, supra.

Prooemium, De Medicina (On Medicine) by A. Cornelius Celsus, pub. in Vol. I,p.15, lines 23-6, Loeb Classical Library ed., 1935, transl. from Latin by W.G. Spencer. _____ _____ [This author should not be confused with the Celsus who lived a century later and wrote against Christianity.]

"[The rationalist doctors say] ...Herophilus & Erasistratus did this in the best way by far, when they laid open men whilst alive — criminals received out of prison from the kings — & while these were still breathing, observed parts which beforehand nature had concealed, their position, colour, shape, ...When a man's viscera are exposed in a wound, he who is ignorant of the colour of a part in health may be unable to recognize which part is intact, & which part damaged; thus he cannot even relieve the damaged part. External remedies too can be applied more aptly by one acquainted with the position ..of the internal organs,.... Nor is it, as most people say, cruel that in the execution of criminals, & but a few of them, we should seek remedies for innocent people of all future ages."

themselves Pharaoh. Ptolemy II was called Philadelphus after he married his full sister in public[274].

Galen's place in this trio of "the best of the doctors" is assured by his treatment not of people but of animals. He routinely and publicly tortured apes and other large animals to demonstrate the function of the nerves and other key features that distinguish the living from the dead. While the first two worked in relative secrecy, Galen performed in front of large audiences to advertise his skills. He also strongly advocated a detailed knowledge of anatomy as a key to medicine and used his public vivisections to fight those who claimed that such knowledge was unnecessary to treat the sick.[275]

Throughout the ages there have been doctors – not only medical doctors but scientists in general – whose desire for knowledge far exceeded their respect for people's lives and bodies. They saw -- and see -- human beings -- alive and dead – as fair game for their studies and mega-projects and used them as they wished whenever they thought they could get away with it.[276]

While murder for science and the abuse of human bodies was – and is - usually secretive, the abuse of animals – as we saw with Galen – was, until recently, completely open and public. Often enough it wasn't really useful know-ledge that these 'doctors' were after. It was more a reputation for having the kind

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274 **A.** Ptol. II began an incestuous line that led, to Cleopatra VII,[see F. infra] last Ptol. & last Pharaoh. [TRACT. SOPHERIM [SONC.] CH.1, HALACHA 7]:
B "It once happened that 5 elders [of Israel] wrote the Torah for King Ptolemy in Greek and that day was as ominous for Israel as the day on which they made the golden calf since the Torah could not be accurately translated."
מעשה בחמשה זקנים שכתבו לתלמי המלך את התורה יונית והיה היום קשה לישראל כיום שנעשה העגל שלא היתה התורה יכולה להתרגם כל צרכה
C.1 HALACHA 8: 72 elders [of Israel] in 72 rooms were asked by king Ptolemy to transl. the Torah & they introduced 13 alterations, incl. translating [אַרְנֶבֶת] hare/rabbit as an animal with small legs ['…because the name of Ptolemy's wife was 'rabbit' [in Grk]…so that [Pt.] should not say: 'The Jews mock me & they [therefore] inserted my wife's name in the Torah [among the non-kosher animals [Lev. 11:6, Dt 14:7].] Talm. Bav. Meg. 9a&b, Schott. Trans., [Ptolemy 'family name' was Λάγος[Lagos] =Gk for rabbit or hare. This is the only one of the 13 where an explanation is given in the text – & it also says Ptolemy will think the Jews are mocking him: He's seen as paranoid]See also Talm. Y. Meg. Schott. 15a-2,Ch.1,H.4 & Nid.30:, below, for hints our sages knew what kind of people the Ptolemies were.]Contrast transl. of Akilas, λαγωός [781-F].
C.2 See Also:"Tractate Sefer Torah": Seventy Elders wrote the Torah for king Ptolemy in Greek, & that day was as ominous for Israel as the day on which the Golden Calf was made, since the Torah could not be adequately translated.
שבעים זקנים כתבו התורה לתלמי המלך כתיבה יונית והיה אותו היום קשה לישראל כיום שעשו את העגל שלא היתה תורה יכולה להתרגם כל צרכה:
C.3 'Multiple Authorship of the Septuagint Pentateuch', Hayeon Kim, Brill,2020 Shows by statistical-linguistic analysis; 5 translators 1 for each of 5 books.
C.4 "The Letter of Aristeas", Benjamin G. Wright III, 2015, 500+p. The letter says nothing about seclusion from each other or secrecy of the purpose.
C.5 We don't have to assume the alterations listed were understood to be the only ones. 5 elders noted in **B** is consistent with the 5 translators in **C.3.**
D. The translation for Pt. was made under duress for a known violent lunatic – Akilas' [& Sumchos] was made accurately, under Chazal, for use by Jews. Akilas' [& Sumchos] work became less important as Jewish life shifted to areas, like Mesop., beyond Roman Empire's reach. It became even less imprtant as Arab/Moslem forces replaced Greek speaking, mostly Christian, governments in Israel, Syria, N. Africa, etc. – as shown on the map at right.
E.1 However, in >300 yrs from Ptolemaic Septuagint to Akilas, the Jewish community in Alexandria became less able to read Hebrew & more conver-sant in the Greek of their city. So they made more regular use of the Greek version made under duress-- a version that was presumably readily available in the library of Alexandria to be copied by those who could afford it. After the Roman devastation of the Jewish community in Israel, Syria & Alexandria, the Septuagint was ultimately forgotten among the Jews -- at least in part as a result of the same phenomena that marginalized Targum Akilas [& Sumchos]. The latter authoritative translations reduced the attractiveness of the Septuagint among those who wanted to stay close to the Rabbis & Chachamim. [except for Sumchos] Noted in email to Univ. Prof. Dr. Giuseppe Veltri 3/31/16.
E.2 "This chain of Jewish translations into Greek… culminated in the neo-Greek translation of the Constantinople Pentateuch (1547)…with a view to unifying the Jews in the West [part of Byzant. Emp. in a common liturgy] as is explained in the Hebrew title of the work…This Pentateuch…is in the Jewish trad. of literal transl. handed down from Aquila which continued throughout the Byzant. era. "Natalio Fernández Marcos, '*Non placet Septuaginta:*Revisions & New Greek Versions of the Bible in Byzantium':Jewish Reception of Greek Bible Versions,N.de Lange, J.G.Krivoruchko, C.Boyd-Taylor, Eds. '09).
E.3 "The Constantinople Pentateuch and Medieval Jewsih Use of Greek Biblical Texts" Julia G.Krivoruchko,Ch 35, p501-19 in "Oxford Handbook of the Septuagint"2021, ed. by A. Salvesen & T.M. Law.791+p
F. Niddah 30b: experiment of Cleopatra in which she had at least 2 of her handmaids made pregnant & then executed & dissected to determine the nature of embryo/baby in womb at 41 days after conception. Lev 12:3-6. In story of her experiment, Chazal call her "Grecian Queen" & "Queen of Alexandria." They call her & her court: שוטים "morons."

G. Cleopatra is also said to have experimented on the use of poisonous reptiles to kill herself – by using them to murder others. "*At all events, she kept at hand fire to consume her wealth, and asps & other reptiles to destroy herself, and she had the latter tried on human beings, to see in what way they killed in each case.*" The Roman History, V.51, Cassius Dio. [155–235CE] Transl. from Greek. Publ. in Vol. VI, Loeb Classical Libr. ed., 1917.

275 **A.** Shock and Awe: The Performance Dimension of Galen's Anatomy Demonstrations. Maud W. Gleason, Version 5, Jan./07, 31 p., Stanford U., Princeton /Stanford Working Papers in Classics

B. With all this, Galen also wrote : "Of what use to aetiology, diagnosis & treatment [of disease] could a knowledge of the muscles of the tongue or of the muscles, nerves, arteries & veins that run through the heart & viscera if it was impossible to act upon them in any way?" Quote is from *De anatomicis administrationobus* , Karl Gottlob Kuhn, V. 2, p.284 & 287, [Quote not found at these pages!check further.] cited in

C. "Leonardo, Anatomist or Natural Philosopher?" F.C. Wells, *The Heart of Leonardo, p. 18, 2013*

Galen was also the leading promoter of bloodletting. In 17 centuries that his prescripttion held sway, he may've been responsible for weakening & killing more people by bloodletting than all who benefited from all of his other prescribed treatments combined. See in this sefer: THE QUESTION OF BLOODLETTING.

276 It may be that the first example of such "work" was the tower building project of Nimrod (Gen 11:4) – the first "Dr. of Engineering." For the dehumanizing effects of this, see in this sefer: THE MIGDOL BAVEL.

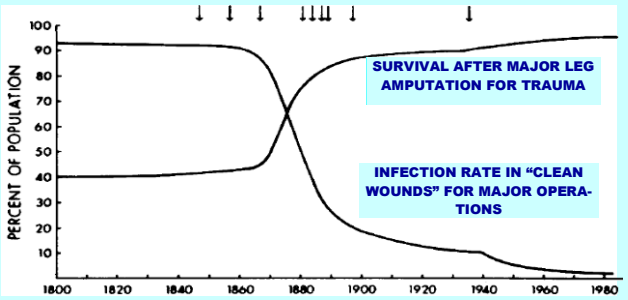
of knowledge that others--their competitors -- lacked. [277]

[277] Most of the detailed studies of human anatomy that were carried out during the 3+ centuries from Vesalius' 1543 pub. of his anatomy classic to the time of the 1st ed. of Gray's Anatomy in 1858 were almost useless for healing the sick. Until the development of aseptic and antiseptic techniques – pioneered by Spencer Wells, Semmelweis# & Lister# [SEE FIG. AT RIGHT] – & anesthesia – pioneered by John Snow -- most surgery on the inner anatomy would have combined extreme pain with an unacceptably high risk of death – if the doctors even knew what the functions were of the parts they were operating on. Exquisitely detailed drawings of the inner surfaces of the brains of the dead didn't make brain surgery on the living viable.

In Europe & the US, in the course of a century, over a million young mothers died of iatrogenic childbed fever when doctors went from dissecting cadavers to delivering babies*.This is ~10X as many people aided by lithotomies, herniotomies, ovariotomies and other invasive, non-amputational surgeries in the same time frame.**

These million deaths were of people who would have lived if they were just left alone. Hundreds of thousands of others died needlessly as a result of the same type of cadaver sourced pathogens. These were mostly people who had limb amputations and other potentially lifesaving surgeries in hospitals but who died as a result of contaminations similar to those that killed so many women in child birth. Still more hundreds of thousands died needlessly or suffered agonizing pain as a result of failure to operate out of fear of hastening the death of the patient through such iatrogenic infections. The increasingly cavalier attitude toward dissection encouraged in medical education since the time of Vesalius led to insensitivity toward the previously normal rules of decontamination after contact with the dead. The larger the hospital, the greater the likelihood that surgeons and their assistants would be handling wounds with hands contaminated from the needless dissections of deceased patients***. See also, in this sefer THE QUESTION OF BLOODLETTING.

A SEMMELWEISS 1847 B PASTEUR 1857
C LISTER 1867 D STEAM STERILIZATION 1881 (KOCH)
E GOWNS & CAPS 1880's (NEUBER & VON BERGMANN)
F KOCH 1887 G GLOVES 1889 (HOLSTED)
H MASKS 1897 (MIKULICZ)
I INTRODUCTION OF PENICILLIN TO SURGICAL PRACTICE



ADAPTED FROM FIG 1 of: "THE CONTRIBUTIONS OF INFECTION CONTROL TO A CENTURY OF SURGICAL PROGRESS". J. WESLEY ALEXANDER, M.D., SC.D., ANN. SURG. * APRIL 1985 P423-428 CENTENNIAL CONTRIBUTION

* This is a preliminary estimate based on the following: Avg. population of Europe (incl. Russia) & N. Amer. ~1790-1890 CE ~3.5E8. Live birth rate ~ 3.3%. ~3% of births were in hospitals, where the death rate for mothers from cadaver-based iatrogenic disease – mostly childbed fever -- was ~1.5% of live births. [Assumes ~1/2 of iatrogenic deaths are due to cadaver contact & half from other sources.]

The cadaver-based iatrogenic death rate for mothers outside of hospitals was perhaps 1/5 of the 0.3% overall death rate for such mothers – or 0.06%. Doctors assisted in birth outside of hospitals & at times went from dissecting a body to delivering babies, e.g. : "Dr. Campbell of Edinburgh in October, 1821, assisted at the post-mortem exam of a patient who died with puerperal fever. He carried the pelvic viscera in his pocket to the classroom. The same evening he attended a woman in labor without previously changing his clothes; this patient died". THE CONTAGIOUSNESS OF PUERPERAL FEVER, Oliver Wendell Holmes, 1843 http://www.bartleby.com/1001.html

In 1835, a leading expert on the subject, FRANCIS H. RAMSBOTHAM, M.D, [whose subsequent work: The Principles and Practice of Obstetric Medicine and Surgery : In Reference to the Process of Parturition, had 6+ editions in England and the US from 1841-58] wrote: "There is no question that a disease highly fatal to child-bed females has often been propagated throughout a district, by the surgeons who have examined the corpse not having taken sufficient care to prevent its spreading through the agency of their persons; the infectious qualities—in whatever they may consist— not being lost, but perhaps even aggravated, after death has taken place." p.133 of: Puerperal Fever, Lond. Med. Gaz., May 2, 1835, p. 129-36

[These estimates are based mostly on Léon le Fort's *Des Maternités: Étude Sur Les Maternités Et Les Institutions Charitables D'accouchement À Domicile Dans Les Principaux États De L'europe, 1866 and* Death in Childbirth: An International Study of Maternal Care and Maternal Mortality, 1800-1950", 622 p. Irvine Loudon. Oxford, Clarendon Press, 1992; "Deaths In Childbed From The Eighteenth Century To 1935" Irvine Loudon Medical History, 1986, 30: 1-41] 3.5E8 x 0.033 x 0.03 x 0.015 + 3.5E8 x 0.033 x 0.97 x 0.0006 = 5.2E3 + 6.7E3 =11.9E3/yr. x 100 yrs~=1.2E6 iatrogenic deaths of mothers.

**The history of lithotomy and lithotrity.E. Riches, An. of the R. Coll. of Surg. of Eng., 1968, Oct.; 43(4): 185–99. On ovariotomy, see: Valedictory Address of G. W. Balfour, 1884, p8-18 . However, the most common major "operation" that involved "penetration" of the abdominal wall was childbirth. Did the many dissections of dead pregnant women by W. Smellie and W. Hunter[A] -- the greatest of the doctors in their field at the time -- contribute substantially to the near halving of maternal deaths in childbirth during the 18th century? Their possibly dissection-based improved understanding of placenta previa, for example, may have saved many lives. However, from a review of Edward Rigby's An Essay on the Uterine Hæmorrhage[B], it appears that Rigby, not Smellie or Hunter, was primarily responsible for life saving discoveries in this area. These were made in the course of delivering babies, not general anatomy. Rigby also served as Mayor of Norwich, Eng. -- in an effort to promote public health. In Adrian Wilson's The Making of Man-Midwifery, Childbirth in England, 1660-1770, Harv. Univ. Pr., 1995, there's no mention of placenta previa. He suggests (p202) the the maternal mortality rate reduction from 1700-99, is attributable to the use of forceps, better nutrition, hygiene and emergency visits by doctors/man-midwives. However, from authors cited by Wilson – e.g. Sarah Stone[C], Frank Nicholls[D] and Francis Foster[E], a clearer picture emerges of the true role of anatomy in this century.

Young, inexperienced men, armed with the cachet of dissection and the examination of relatively few live women, equipped with forceps, tools for craniotomy – and great expectations of the value of such things on the part of their clientele – would kill many babies unnecessarily and maim many others. They did this out of the sense that they were expected to do something –while the great majority of births required little more than the natural process and time. In their haste to demonstrate their value, they not only killed babies but injured or even killed their mothers. Their schools – such as the one initiated by Wm. Smellie, would charge students to examine women in childbirth – while giving free services to the women. These schools would become the unintended promoters of childbed fevers of all types. The concentration under one roof of women with open wounds – often the result of misuse of forceps – and multiple, unnecessary probings by students, was an excellent way to pass infection from woman to woman and kill tens of thousands of them. When these schools combined hands-on practice on live women with hands on dissection of the dead – a key feature of Wm. Hunter's school -- the likelihood of killing women both in and out of "school" was greatly increased. In contrast, with traditional midwifery, the patient load was usually less than one per week, greatly reducing the possibilities of a midwife spreading infection.

The best single statement on this is probably the following from Francis Foster: "There cannot be a greater Error than that the Knowledge of Anatomy is necessary for any Cases, but that unhappy one in many thousands, where the Child must be killed in the Womb…and if the Child is to be turned – there needs no Knowledge of Anatomy to distinguish an Hand from a Foot – or a Head from any other part – by the feel" [spelling, capitalization and italics as in orig.] See also Talmudic refs to caesareans.

*** Hospitalism. by James Y. Simpson p289-405, in: Anaesthesia, hospitalism and hermophroditism" The Works of Sir James Y. Simpson V. II. Edinburgh: Adam and Charles Black, 1871:289–405. "Puerperal Fever in Eighteenth-Century Britain" Margaret DeLacy, Bull . Hist. Med. v. 63 #4, 1989, p. 521-56 see: "The British Medical Profession and Contagion Theory: Puerperal Fever as a Case Study, 1830-1860", Gail Pat Parsons, Medical History, 1978, 22: 138-50.

A. HUNTER'S GRAVID UTERUS WITH ITS MANY FULL SIZE, GROIN FRONT, REALISTIC IMAGES OF DISSECTED PREGNANT WOMEN, MAY ACTUALLY BE A WORK OF MEDICAL PORNOGRAPHY.THE PRINCIPAL ARTIST, JAN VAN RYMSDYK, IS NOT CREDITED AND THE BODIES FOR THESE IMAGES WEREN'T VOLUNTEERED. **SEE FOOTNOTE 281 B FOR DETAILS /LINKS** B. (6 EDITIONS, 1775-1822, THE 1789 EDITION IS LINKED HERE.) EDWARD RIGBY (1747-1821) OF NORWICH AND HIS *ESSAY ON THE UTERINE HAEMORRHAGE*, THOMAS F BASKETT, R SOC MED. 2002 DEC.; 95(12): 618–22 C. A COMPLETE PRACTICE OF MIDWIFERY, 189 P 1737 D. THE PETITION OF THE UNBORN BABES 1751 E.THOUGHTS ON THE TIMES 204P. 1779

Before we give more examples of such practices – up to our own time and in our own community – we should first better understand what the Torah perspective is on the treatment of the human body both alive and dead[278-A].

Jews are not free to treat their own living bodies anyway they wish. We must be careful in guarding our health and are prohibited from activities that are known to carry substantial risk of injury. In this light, we're forbidden to start smoking tobacco [278-B]. We're also prohibited from scarifying or tattooing our bodies [Lev. 19:28] and abusing the bodies of live animals[278-C].

For the dead, there are two salient laws:

1. **Even the body of a hanged criminal must be taken down and buried before sunset *[Deut. 21:23] [Talmud Bavli, Sanhedrin 46 a-b]***

2. A person found slain in the field must be buried by the leaders of the nearest community. Out of this comes the law of "meis mitzvah" – the mitzvah to bury unclaimed corpses.[DEUT. 21:1-9]

Based on these laws, the rabbis made it clear that we're forbidden to have any benefit from the body of a dead person or of the clothes they are buried in. The Shulchan Aruch determined that this applies to both non-Jews and Jews – actually putting non-Jews first in the prohibition.[279]

All of these prohibitions are set aside – as are the laws of Shabbes – if we would otherwise have to violate them to save life or limb – including life or limb of a non-Jew. This set-aside is what allows us to have surgery on our bodies, transplant organs and even perform autopsies. The set-aside – again like setting aside the laws of Shabbes -- applies only when the saving of life or limb is in front of us. Just as we can't build a hospital on Shabbes for the unknown lives we may save in a year, so we can't perform autopsies on bodies today for the possible general health improvements of unknown individuals in the future.

All of this is reasonably well established in Jewish Law. What's new here – what will be shown in this chidush – is that the use of any human bodies for dissection in routine medical education should be prohibited in our time. This will be shown to apply to both non-Jewish and Jewish bodies, to voluntarily donated bodies and to bodies taken as "unclaimed" by force of law.

In Dec. 1828, William Burke was convicted of murdering at least 16 people whose fresh bodies were supplied to Robert Knox, the leading anatomy professor of Edinburgh, Scotland.[280] Three

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278-A 'Watch yourselves very carefully' וְנִשְׁמַרְתֶּם מְאֹד לְנַפְשֹׁתֵיכֶם Dt. 4:15.

278-B See: Chofetz Chaim, Zecher L'Miriam, ch. 23, '25 ____ L'kutei Amorim, ch.13 & R. Moshe Feinstein: Teshuvos Igros Moshe, Chosh'n Mishp't 2:76. See also tobacco & opium in Jewish, Moslem & English law in 'TORAH AND THE TALIBAN'A.S.Adler

278-C For questions of cruelty to animals - צער בעלי חיים - Tsar Baalei Chaim - under Torah Law, see: DON'T MUZZLE THE BEAST II GATEWAY TO ANIMAL HUSBANDRY - in this sefer. At least one Torah Law specifically prohibits performing certain surgical/medical procedures on animals even if painless & even when beneficial to people: Lev. 22:24. For insight into 'dog labs' - the once almost universally required but now almost universally banned practice of dissecting & operating on live dogs in medical school, see אות הוא לְעֹלָם A SIGN FOREVER.

279 A. Shulchan Orach, Yoreh Deah, [1563 [pub. Venice 1565] Laws of Mourning, §. שמט [349] "It is forbidden to benefit from a corpse or its shrouds."

מת בין עובד כוכבים ובין ישראל תכריכיו אסורים בהנאה.

This is the most authorativive codification of Torah Law --composed by R. Yosef Karo [1488-1575] of Safed, Israel & supplemented, in the 1570's, by R. Moshe Isserles of Cracow,Poland. B. [*WORK IN PROG*: On Peysach Sheni, 5778,at NLI, an expert on the Gra, said putting non-Jew 1st may be result of censors but best edition has גוי ,not עובד כוכבים -so, latter is from censor. 1st Tshuva on dissection in medical educ.:Yaakov Emden ספר שאילת יעבץ] Lemberg, 1739, Hebrew Books _____ "Emden began printing the book in 1739 but only published it in 1749. The date on the title page is the first day of Kislev 5499…[11/13/1738]. See Emden, Megilat sefer, 161. I am grateful to Zvi Kunshtat for drawing my attention to this detail." Copied from footnote 65 of "The Sabbatian Who Devoured His Son: Jacob Emden's Anti-Sabbatian Polemics of Cannibalism", Shai A. Alleson-Gerberg, AJS Review 43:1(4/'19),23–46] 1737[- #41,p70-79,~16k wds: forbidden to benefit from a Jewish or non-Jewish corpse. [מת found 16x & ' מת נכרי ' is 7x in this tshuva & 1x on p156] [Main part on dissection of non-Jew is לה. right col., par, 2, to לז –thanks to Yaakov Fonteyne at Ohr Someyach] Noted in: "The Bodies Exhibition: Educational Experience or Modern Day Side Show?" Rebecca Marmor, Derech HaTeva, Jun 2/'07, p42-4_____ [But see Footnote 295-C for 'Anatomy of Halacha' by R. Reichman, MD, citing R. Emden tshuvah but leaving out his response.]As Venice was both center of eductn of Jewish MDs & printing Hebrew books,[Talm. Bavl; 1520–3, Mikr. Gedolot:1517–25, Jer. Talm. 1523, despute over printing of Mishneh Torah resulted in burning Talmud in 1553, Hebr. printing in Venice didn't resume until early 1560's. Those traveling to Levant to sell the latter would bring medical news– incl. Vesalius book & grave robbing. Students of Ishmael dissected a woman condemned by the king [under compulsion accdng to Ben Ish Chai? Bechor. 45a. Sanhedrin buries beheaded, burned, etc., criminals in special graves, then after flesh is gone moves bones to family graves. Sanh 46a]. C. It's broadly followed among most communities of Orthodox Jews – both Ashkenazi & Sephardi. Even so, it appears to go against the majority of its predecessors, incl. Talm'd Yerush.[feeding a small piece of a non-Jewish body to a dog, Shab.10.5/6,Shotten.,v.III,1sted., 1st impr., 10/'13,p.78a2,note4. Is this Halacha or conjecture? ASA. צ"ע] Law shown at שמט may've been influenced by law & activities in Catholic lands of DaVinci & Vesalius, where dissection was permitted on subjects "convicted of unpleasant crimes… [who weren't] Catholic, but preferably of Jewish origin."[p.21 Wells, [See footnote 275 C] [EMPH ADDED] D. ["And the king of Ay, [Joshua] hung on a tree until the evening; & at sunset, Joshua ordered and they took his corpse down from the tree and they threw it at the entrance to the city gate & they set up a great heap of stones over it which is there until today."Josh 8:29: Radak on this says J. did this because prohibition of *halanat hamet* – delay of burial – applies to *all* hung in *Eretz Yisrael*, incl. non-Jews. Ralbag says J. was adhering to Dt.21:23 on *hh*. Ramban at Dt. 21:23 says Josh. buried Canaanites because of *hh*. E. If bodies of non-Jews were mutter b'hanah, Chazal, Gaonim & Rishonim—incl. Rambam- would've dissected dead non-Jews/Non-Moslems–ASA] F. See p. 101 on Jewish, Chr. & Mosl. Law on dissection/autopsy in 'Public Trust in Medical Research?:Ethics, Law and Accountability' P. Cheung, S. H. Lee,'16, CRC Press. "Papal ban on human dissection was lifted in 1556" [1 yr after pub of 2nd ed. of Vesalius anatomy book] says: Vesalius was accused of grave robbing and {dissecting a live person} … The Inquisition put a death sentence upon him which forced him to flee {make a pilgrimage in early 1564} to Jerusalem" p36. [Words in brackets { } are 'Adapted from Vivian Nutton's Introduction to *The Fabric of the Human Body*.'_____]See copy of contemporary letter [1565] in NLM saying cause of pilgrimage was dissecting-with family permission to find the cause of apparent death -a Spanish Nobleman–but found, on opening his body, that his heart was still beating. _____ p1 _____; p2 _____ "Andreas Vesalius' fatal voyage to Jerusalem", Maurits Biesbrouck, MD, 6/13/16

280 Author of "A Manual of Human Anatomy, Descriptive, Practical, and General" ~700 p, 250 wood engravings, 1853. --a very compact & successful anat-

years later in London, John Bishop and Thomas Williams were found guilty in connection with the murder of at least three people whose bodies they provided to local London anatomists. It was understood by the cognoscenti that this was just the tip of the iceberg.[281]

The cognoscenti also understood that something had to be done to stop this predation before it got too far out of hand – before the "wrong people" came to be murdered – or the "good people" lost confidence in the government[282]. The result was a new program that shut down the informal operations of grave robbers and murderers in the service of "the best of the doctors." The new program was established by the Anatomy Act of 1832. It legalized and systemized the medical profession's predation on the poor. This Act provided that the bodies of those who died in prisons, hospitals or work houses could be taken to be dissected in certified anatomy labs – provided their families didn't object. As a practical matter, this meant that the friendless and destitute who died in government institutions would have their bodies taken and dissected regardless of their stated opinion when living.[283]

Laws of this type survive today in New York and other ostensibly civilized societies.[284] In New York State, the law provides: 1. If a person dies and is "unclaimed" by family or friends in a few days, their bodies may be delivered to a medical or mortuary school for educational purposes. 2. If the deceased is carrying an identification card showing they don't want to be dissected, their will is honored. There's no provision in the law for the registration of such cards before the card holder's death. There's also no provision for any penalties for destroying the cards or just not recognizing their existence. Almost none of those who end up as "unclaimed" are even aware of the existence of this law[285].

Over the last three decades, thousands of bodies in New York State have been delivered to medical schools under this law. Even so, there is no published record of this. There is no mention of the program on the website of the Office of the Chief Medical Examiner [OCME] of New York City and no mention in their annual reports.[286]

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omy text before publication of Gray's Anatomy, 1st ed. in 1858. Dr. Knox published several other works incl. some that view humanity as made up of several species. His 600 pg "The Races Of Men: A Philosophical Enquiry Into The Influence Of Race Over The Destinies Of Nations" 1862, has the English Anglo-Saxon 'species' superior to all others.

[281] "At least two well placed observers – [Dr. Thomas] Wakley [founding editor of The Lancet (1823-1862)] and [Dr.] James Somerville ['later to become first inspector of anatomy' (p 115)] – independently committed to print their opinion that the detection/conviction rate for burking was entirely unrepresentative of the incidence of the crime. Somerville plausibly argued that there were 'many others' in addition to Burke and Bishop, 'whose greater caution in the selection of their subjects, greater skill in the various arts of destroying life and more circumspection in their dealings, have screened from the hand of justice' Wakley himself believed the number of probable victims ran into three figures." Ruth Richardson, "Death Dissection and the Destitute", U. Chic., 2000. p. 197. 'Burking' murders actually began in Scotland at least 8 decades before: Torrence and Waldie were found guilty and executed in Edinburgh in 1752 for the murder of a young boy whose body they supplied for dissection to surgeon-apprentices. [Noted in Don Shelton's ebook, (p141 revised 12/29/2010 EditionE1mreviewDec) - see below - and cited in: Boswell, James, *The Scots Magazine*, Vol. XIV, Edinburgh, Sands, Murray, and Cochran, 1752, p 98-9

In "THE REAL MR. FRANKENSTEIN: SIR ANTHONY CARLISLE, MEDICAL MUR-DERS, AND THE SOCIAL GENESIS OF FRANKENSTEIN" (eBook, 2010) http://therealmrfrankenstein.blogspot.com/ Don Shelton argues that "burking" was carried out at the instigation of both Drs. Wm. Smellie and Wm. Hunter for the production of their respective anatomy books. These works contain multiple drawings of dissected full term pregnant woman. See, e.g., plates 10, 12 and 13, page images 31, 37 & 40 of "A set of anatomical tables, with explanations, and an abridgment of the practice of midwifery… William Smellie, M. D. Edinburgh, MDCCLXXX. [1780]. ."The Anatomy of the Human Gravid Uterus" William Hunter, 1774, [Find a more complete scan.]

[282] The murders were the predictable result of competitive pressure on would-be doctors to prove their worth by dissecting cadavers. As long as courts of England were executing many people whose bodies were made available to medical schools, the supply & demand for bodies was in relative balance. As the number executed declined sharply & demand for doctors increased – perhaps partly as a result of the increase in mechanized warfare—the situation changed dramatically. Legal bodies became relatively scarce & the medical profession began robbing graves & then receiving the bodies of murder victims without questioning their provenance. Similar changes were taking place in other "western" societies in the same time frame. It's noteworthy that the types of conditions that could be effectively treated by anatomy-trained doctors, e.g. Napoleon's [1769– 1821] Dominique Jean Larrey [1766–1842], were most often war wounds. Galen, 16 centuries before, had been most effective in treating wounds from gladiatorial combat.

[283] Perhaps the most important and comprehensive contemporary review of this issue is: "To The Working People on the New Dead-Body Bill" 24 Jan 1832, by William Cobbett, ~10,500 words, col. 257-281 of Cobbett's Weekly Political Register , V. 75 #5, Sat, Jan 28th 1832, London. It provides biblical, ethical, legal, educational, political & scientific reasons why the dissection of people against their will should be forbidden. Cobbett "had assisted … [Dr. T. Wakley [see footnote 281, supra]] in the publication & editing of the Lancet" from its founding in 1823. [p 240 of The Life and Times of Thomas Wakley: Founder and First Editor of the 'Lancet", S. Sprigge.1897]. Home schooled, autodidact Cobbett had also been convicted of libeling "the best of the doctors", Benjamin Rush, 32 yrs. before in Philadelphia – rightly accusing him of purging & bleeding his patients to death.[see footnote 519-II, infra] [Cobbett's 10,500 word essay is also appended to a collection of 13 of his sermons, p243-276. *Sermon # 13 in 13 Sermons, p.226-42, "Good Friday", starts with a quote from Ezek. 22:2-15, then attacks Jews as usurious blasphemers & opposes moves to treat them with equality before the law. It specifically says (p240) that they shouldn't be attacked – so that they may repent.]*

[284] For a history of the implementation of similar laws in N.Y. & nearby states from the early colonial times to late 19th cent. CE, see: American Anatomy Acts. Edward M. Hartwell, M. A., Bost. Med Surg J 1880; 103:361-3 Oct. 14, 1880 (Now: N. E. J. of Med..)

[285] See letter 5/4/10, from "DanStevelman" *Laws of NY, Public Health, § 4211 'Cadavers; unclaimed; delivery to schools for study.'*

This secretiveness alone should alert us to the fact that something is going on here that they would prefer to keep hidden. What is really going on – and why does it matter?

Most educated people are at least vaguely aware that human bodies are routinely dissected by students in medical schools. Most believe that it is somehow necessary and that without such dissections the doctors coming out of medical schools would not be quite as good. Most are also confident that their own bodies – or the bodies of their loved ones – won't end up on the dissection table.

What most people aren't aware of is that the leading board that accredits medical schools in the U.S. says cadaver dissection isn't important. This board, The Liaison Committee for Medical Education, [LCME] hasn't required medical schools to provide any contact with cadavers whatsoever in order for a school to achieve the highest level of accreditation available. This has been true since before 1980.[287] Most people also aren't aware that the rate of donation of medical family bodies for this noble cause is under 4%.[288-A]

What most people -- including most doctors -- are almost completely unaware of is that technology has advanced so much in recent decades that anatomy can be taught better with computer aided simulators than with cadavers. These machines can simulate a live person – even the body of the particular patient a doctor is trying to heal. After donning special goggles and gloves, the doctor is given the three dimensional visual and tactile experience of doing surgery on their actual patient. If they cut the wrong places, it bleeds. A near miss sounds an alarm.[288-B]

The cost of using the simulator is like the cost of using a computer – almost nothing beyond the user's time. The marginal cost of the simulators themselves is relatively low. The main cost –like the cost of computer software – is in the development. The greater the number of institutions using simulators, the lower the cost for all and the more money there will be for even better, more refined systems.[289-A,B,C]

The law is actually ambiguous as written. It states: § 4211.3.a,b,c: *"No body of a deceased person shall be delivered or released to or received by, any university, college or* school *or institute (a) if, [*claimed by family or friends*], or, (b) if prior to his or her death, the person shall have expressed a desire that his or her body be interred or otherwise* lawfully *disposed of, is carrying an identification card upon his or her person indicating his or her opposition to the dissection or autopsy of his or her body, or,(c) if [*known next of kin conveniently reachable*]."* The card is not stated as the sole method for the deceased to have expressed their view that they want to be interred, etc.

[286] The most recent annual report that the author found was 1988. Three written inquires to the OCME concerning this program resulted only in a citation to the law that makes it legal with no information at all on the number of bodies sent out for dissection. They wouldn't even provide a list of documents in the public domain.

[287] Personal communication with Robert Eaglen, Associate V. P. LCME, Medical School Standards and Assessments. 3/15/01. He was confident that there was no requirement before 1980, but couldn't say how much before without doing some time consuming research. See: "Functions And Structure Of A Medical School, Standards for Accreditation of Medical Education Programs Leading to the M.D. Degree", 6/08, ____

[288-A] "Medical family bodies" includes the doctor, spouse and parents of both. There are typically 5 students/ca-daver in anatomy classes – or 30 medical family bodies/cadaver, if even one out of thirty of these potential bodies – excluding siblings, children and grandparents – were donated, there would be no need to seek bodies from outside the medical family circle. A 2009 survey of Dutch anatomists revealed: "… none of the survey participants [n=54] are registered as a whole body donor and that only a quarter of them would consider the possibility of body donation." S. Bolt, et al, "Anatomist on the dissecting table? Dutch anatomical professionals' views on body donation" Clin. Anat. V. 25, # 2, p. 168–75, '12. __

When AECOM's Prof. Todd Olsen, who hadn't seen this study, was asked what he thought was the % of the 54 Dutch anatomy professionals who said they were "whole body donors" he answered immediately: "Zero". He added that this would be true for almost any ethnic group. He also added, without prompting, that he personally was planning to be a whole body donor -- and noted the collection of skulls of well-known anatomists at a key Italian medical school. (Personal conv. in the lobby of AECOM, late July 2012). He's the leading anatomist at AECOM & one of the most respected in his field. He had known for 2 years that I'd found him misinforming his students about the provenance of the bodies they were dissecting. [See footnote 295]

A few days after this 2nd unscheduled interview – the next time I came to AECOM to use the library - a man in a suit stopped me & said "We don't want you here." He had nothing on official stationery – but expelled me from the building. Phone & email contacts (2/27/13) with Dean Burns' office resulted in no clarification or formal response.

[See also notes on 70 minute interview with Todd Olsen, Sept 10/01, notebook D, p21-23. He says ~ 1000 bodies are used/year in NY State, ~ 75 unclaimed – all 75 from the OCM –NYC. Only rabbi he heard of was Israel Miller of YU. He said repeatedly that it would be unethical to ask questions of would-be donors concerning race, religion, sexual orientation, etc. He said that there is no screening process during which would-be donors are referred to the clergy of their choice for clarification of religious law. He said that he had been in medical education for 25 years & that, as he understood it , there was no clear opinion in Jewish Law on the various issues regarding dissection & the exposure of Cohanim to the dead.]

About a year before, [5/2010] I had interviewed Prof. Olsen's long-time colleague, George J. Fruhman, Ph.D., a member of Einstein's founding faculty and associate professor of anatomy and structural biology for 50 years. I asked him if he was familiar with the work on simulators and whether he'd like to see what I had written on this subject up to then. He said, "No… We prefer bodies." He died not long thereafter at the age of 86, leaving a multimillion-dollar bequest to Einstein, for four-year scholarships for medical students of intellectual merit. According to a source close to AECOM, Dr. Fruhman, a holocaust survivor, was not a whole body donator.

[288-B] Shown with the sinus surgery simulator by Dr. Marvin Fried at Montefiore Hospital, Bronx NY. [see footnote 289-B]

[289-A] "Randomized Controlled Trials: A Systematic Review of Laparoscopic Surgery and Simulation-Based Training" A.Vanderbilt, et al, Global J. of Health Science; V.7,#2, 2015, 'Laparoscopic surgery has become the "gold standard" for common surgical procedures' "Conclusion: Simulation-based training can lead to demonstrable benefits of surgical skills in the OR envi-

So why are we still using the bodies of the friendless and destitute – or the bodies of those who are defrauded into thinking that donating their body to "science" is a noble thing to do? The simplest answer – and the truest – brings us back to Herophilus. Why did he dissect live people? Because he could do it and get away with it in the morally depraved society in which he operated. It is 55 years now – as I write this – since the Lubavitcher Rebbe, Rabbi Menachem Mendel Schneerson, Z"TsL,[1902-1994] wrote:

לימוד מבנה הגוף - להשתמש באמצעי תבניות או מודלים.

"For purposes of study of anatomy, etc., it is surely possible to use artificial forms and models."[290]

Rabbi Schneerson had been a student at leading universities in both Berlin and Paris and had a very good understanding of what actually went on in medical schools – what was really necessary for learning and what was just done "because they can."[291] **The great Rabbi, who, in a few decades would become a household name among the Jewish People, said this in the months before the Albert Einstein College of Medicine of Yeshiva University opened its doors for the first time. More than three years later, Reb Moshe Feinstein, Z"TsL, [1895-1986] published an eleven page opinion permitting the use of non-Jewish bodies for a "צורך גדול--great need".**[292] **The opinion is so profound that yeshiva students – even those who are pre-med -- have difficulty getting through it.**

There was apparently an understanding at the time that dissection of human bodies in the education of doctors met the standard of "a great need"-- as: A. Knowledge learned by dissection was needed to save life & limb; & B. This was the best way to get it. It was also believed that, in NYC, all the bodies would be unclaimed from the morgue – where the Hebrew Free Burial Association systematically tries to remove and bury all Jewish bodies declared "unclaimed"[293]**.**

It would've been clear to Reb Moshe that if this could only be done at the expense of *darke noam* and *darke shalom* (the ways of Pleasantness and Peace) or by using Jewish bodies also, the use of any bodies would have been prohibited.

We know now what actually happened. Jewish bodies were routinely and knowingly dissected at AECOM for close to half a century.[294] **Most of**

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ronment. This review suggests that simulation-based training is an effective way to teach laparoscopic surgery skills, increase translation of laparoscopic surgery skills to the OR, and increase patient safety; however, more research should be conducted to determine if and how simulation can become apart of surgical curriculum." ____

289-B "Experts anticipate that by 2010, surgical simulators will have reached a level of performance where they can be acceptable as tools for testing and certification." From: Construct Validity of the Endoscopic Sinus Surgery Simulator, Marvin P. Fried, et al, Arch Otolaryngol Head Neck Surg. 2007 Apr;133(4):350-7. _____

289-C A comprehensive and up to date treatment of the subject is given in: Fundamentals of Surgical Simulation: Principles and Practice, A. G. Gallagher, G. C. O'Sullivan, '12, Springer V. They point out that advances in computer imaging/ robotics assisted minimally invasive surgery have reduced the need for conventional anatomical studies.(p63)

290 Hebrew text copied from: אגרות קודש :To the Conference of Religious Physicians. 2nd day of Rosh Chodesh Tammuz, 5715, _____ (This was June 21, 1955, Mom's 41st English birthday. Moms Hebrew Birthday is 27 Sivan, 5674 (Yom Rishon)

291 Paraphrase of President Bill Clinton's response during the Monica L. affair. "just because I could." Bill Clinton, on '60 Minutes,' Speaks of Affair With Intern. Courtney C. Radsch. *New York Times (1923-Current file). New York, N.Y., 6/17/04. p.. A27,*

292 Iggerot Moshe, Yoreh Deah, part 1 #229, p 455-465, dated Rosh Chodesh Menachem Av. 5718, in response to a question by Rav. Yitzchak Isaac Liebes יצחק אייזיק ליעבעס Rosh Beit Din of the Rabbinical Alliance/Igud HaRabbanim of America_____ AECOM student, Daniel Strauchler, M.D[2015] published "The Study of Anatomy: A Dissection of the Sources, רפואה ללימוד מתים ניתוח 11/29/09, 5 pages _____

This was 1 Yovel – 50 years – before the p'tera of my mother, Shabbes Maasei, R. Ch. Av, 5768, yahrtseit of Aaron HaCohen. See the author's sefer "A Sign Forever." Subsequently, Reb Moshe wrote: לנתח איסור צוואתו לפי אף רפואה לצורך המת את Prohibition to operate on the dead even for healing according to a will. (late 1979)כסלו תשל"ט. This was in response to a question from Rabbi Moshe Sherer, Z"TsL, who had received the question from the Office of the President in Wash., Igros Moshe, V. 8, Yoreh Deah, simmon nun tes (49) pdf p. 334-5 _____

293 This statement is based on what R. Moshe Dovid Tendler, Shlita, Reb Moshe's son in law, assumed was the source of all of the bodies since the founding of AECOM (Personal Communication, Glueck Beis Medrash of Y.U.., 11 Adar 5770, 2/24/'10). Shortly thereafter he told me that he instructed his students to look at the 'toe tag' of the particular body they would be dissecting to try to determine from the name on the tag if they were Jewish or not.

R. Hershel Schachter, Shlita, a close student/confidant of "The Rav" -- R. Yosef Dov Ber Soloveitchik, Z"TsL -- assumed that, from its inception, AECOM accepted all donations and buried the Jews without dissection. (Personal com., Glueck Beis Medrash, Y.U., 17 Adar , 5770, 3/02/'10).

294 The actual number of Jewish bodies dissected has not yet been revealed but it is known that the department of anatomy received donations from all people without discrimination on the basis of religion and did not inform the donor families that such donation was prohibited

these bodies came as voluntary donations from Jews who thought they were helping science and helping Jewish doctors get a good education. It's likely that hundreds of Jewish bodies were dissected at AECOM before the program quietly ended in recent years[295].

In the spring of 5770 (2010) however, religious Jewish medical students at AECOM were routinely told -- when they asked about the provenance of the bodies they were dissecting -- that ~"all of the bodies are voluntary donations." They even had faculty supervised quasireligious events thanking the "donors".[296]

All this should have been predictable – at least in broad outlines. To a medical student dissecting a human body, there is little if any noticeable difference between Jew and non-Jew. There is also little practical difference in the eyes of the students between the noble purposes that may once have been served by learning anatomy through dissection and the more practical side of getting on with one's education and career. Students aren't taught about abhorrent practices of the "best of the doctors". They aren't asked to consider the pornographic title page of Vesalius pioneering work of anatomy[297] or the skeleton of the Irish Giant, O'Brien, stolen by the

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for a Jew by Torah Law. The fact that it went on regularly for decades is attested by the fact that a senior dean, Deborah Kligler-Krasnow, Assoc. Dean of AECOM '75-'05, thought that it had been approved by "The Rav" himself. (Personal communication by telephone, 3/14/'01. See the author's sefer "A Sign Forever" for how the author came to learn about these things – and additional details.)

Both R. Hershel Schachter and Reb Chaim Soloveitchik, the Rav's son, said that the Rav had never written any approval of such a thing and, to their knowledge, had not approved it at all. Neither of them said that he had published anything clearly disapproving of it. Reb Chaim said that his father was far removed from what went on at AECOM and that the professors there would tell their students ~"whatever they think the students want to hear and that they will take bodies from whatever source they can." (Personal communication with R. Hershel Schachter, noted above and with Reb Chaim, on the 5th fl. Gottesman Library, YU, shortly before Jun. 7/10)

[295] A. Personal tel. convers. with AECOM Exec. Dean, Dr. Edward R. Burns, 8/08. The program of taking Jewish bodies was ended so quietly that even rabbis in the know, like R. Z. Charlop & R. Y. D. Bleich, weren't aware of the change. R. Bleich remarked in our very brief conversation that AECOM had been dissecting Jewish bodies for "40 years". (Personal commun. with R. Bleich at Cardozo School of Law, 10/13/'10, on the way from the room on the 4th fl. where we davened mincha to his class on the 2nd floor that began minutes after mincha ended.)

B. When some rabbinical students at YU heard this, they remarked ~"If they knew about it for so long, why didn't they write anything about it." The situation might be understood from a remark by R. Dovid Fuld, who has been funding conferences on medical ethics at YU for years. When, at the end of one such conference, "A Beautiful Mind: Jewish Approaches to Mental Health" [23 Cheshvan 5771 (10/31/'10)], I told him about what was going on at AECOM, he remarked: "Only the Chasidim care about the bodies of non-Jews." It may be that the Chasidim care much more about the bodies of the non-Jews because they give much less weight to the opinion of the Gra – who attempted to refute the Shulchan Aruch where it says [see footnote 279] that it is forbidden to derive benefit from the bodies non-Jews. The Gra, AKA, the Vilna Gaon, is known for his very strong opposition to the Chasidim. Both R. Hershel Schachter & Dean Edward Burns were on the panel. The Chair was Rabbi E. Reichman, MD, Prof. of Philosophy & History of Medicine at AECOM , who knows of Herophilus, Erasistratus, Burke & Hare.

C. In "Anatomy of Halacha" an illustrated paper of 8600+ words & 72 footnotes, published in 2008_____, Rabbi Dr. Reichmann refers to the Tshuva of the Yavets as the first tshuva on dissection – but does not say that it forbids dissection of both Jewish & Non-Jewish bodies. [see footnote 279-E] He notes "Rabbi Yosef Karo covers all aspects of human existence, including burial practices and bodily exhumation, but makes no reference to autopsy or dissection." But does not say that R. Karo said that human bodies are issur b'hanah. He mentions that the modern problem of dissection originated after Vesalius publication of his famed anatomy book – but does not say that this was 24 yrs before R Karo's Shulchan Aruch.[see footnote 297] He makes detailed observations about the frontispiece of Vasalius's book but makes no mention of the extreme pritzus that it shows – or its lack of value for healing. He does cite: Pines, "*Des Medecins Juifs au Service de la Papaute du XII au XVII Siecle*," *Le Scalpel* 114 (5/'61),462-470; E. Mendelssohn, *The Popes' Jewish Doctors 492-1655 C.E.* (self-pub.: Lauderhill, Fla., '91).

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[296] Personal interviews with students at AECOM in the spring of 5770 (spring '010). Shortly after Peysach, 5770 - spring '10, I brought this to the attention of Prof. Steven M. Safyer, MD. He was not only President of Montefiore Hospital, but also a professor of public health at AECOM. I contrasted the advanced, simulation based anatomy program of Dr. Marvin Fried at Montefiore with the "bodies of the friendless and destitute" program at AECOM. I described how the students were being lied to and I referred to the program as "social cannibalism."

Rather than responding constructively, as he and other senior hospital functionaries had to some of my previous suggestions, Dr. Safyer ordered that I be expelled from all hospital facilities, everywhere and that I should not be allowed to set foot on their property unless I am brought in for my own medical emergency. I was also told that I couldn't visit sick family or friends, the synagogue or the library. They gave me these orders orally and would not put anything in writing. Around noon, Shabbes Shemos, 5771 [X-Mas Day 2010] , I was stopped and physically held by Monte security guards while trying to assist Rabbis' C.Z & I.H. and 2 other Jews from the YIMP, who wanted to visit a sick person in the hospital. This is a clear example of both how sensitive a subject this is and how "the best of the doctors" act when they think they can get away with it.

[297] *De humani corporis fabrica* (*On the fabric of the human body*),1543 & 1555. It shows a relatively young and pulchritudinous woman with her legs spread in the direction of the viewer. https://www.e-rara.ch/bau_1/content/pageview/6299038 There's nothing that can be learned about anatomy from this picture – except for the unbridled arrogance of the author. Vesalius is dissecting her surrounded by scores of other doctors & onlookers – only one of whom is identifiably a woman. For all his pioneering dissections neither Vesalius nor any of his contemporaries discovered the circulation of the blood.

[Long before Vesalius we have: "*Leonardo [Da Vinci] had been a general and deep student. When I consider what pains he has taken upon every part of the body, the superiority of his universal genius, his particular excellence in mechanics and hydraulics, and the attention with which such a man would examine and see objects which he was to draw, I am fully persuaded that Leonardo was the best anatomist, at that time, in the world.*" William Hunter. Note that da Vinci (1452-1519) isn't known for any contribution to the healing arts & didn't discover the circulation of the blood – despite "his…excellence in…hydraulics" His anatomic studies – involving the self-reported dissection of "more than thirty bodies"[as noted Antonio de Beatis, chaplain & secretary to Cardinal Luigi of Aragon, after a visit with Leonardo, 10/10/1517 _____] in three decades, "[independent of their] relevance to the prac-

great doctor, John Hunter, as a good centerpiece for his museum[298]. They aren't reminded of how the "best of the doctors" in the State of Israel did thousands of head-to-toe autopsies to collect statistics on the internal anatomy of Jews.[299]

Our sages made a fence around the Torah in the area of not mixing milk and meat. They forbade us to eat even egg-laying birds with milk lest we become confused. The process of dissection in medical education and in science in general is an open door to moral confusion: between the noble purposes of healing and the butchery and murder of innocents[300]. In our time with the knowledge that we now have, this Door to Hell should be firmly closed.

II GATEWAY TO HISTORY:
1. SCIENCE AND MEDICINE;
2. CLASSICAL GREECE AND ROME.

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tice of medicine." [p. 19 & 21, F.C. Wells, see footnote 275 C &"The Notebooks of Leonardo da Vinci", v. 1, trans. by Jean Paul Richter. 1888.] [In one of his most famous hydraulic analyses, Windsor 19097v, his sketch of a cross section of human intimacy, he shows semen deriving from the spinal fluid.] William Harvey, [1578 –1657] discovered the circulation of the blood. His 72 p. book, published 1628, had no images of dissections.

[298] The skeleton was stolen from O'Brien's funeral procession to be used as a center piece in Hunter's medical/anatomical museum. It now hangs in the museum of the Royal College of Physicians in London.

[299] **A.1** "Compulsory Post-Mortem Operations in Israel" Committee for Safeguarding Human Dignity, ~40p. Plus cover letter. '66, 13 Straus St., Jerusalem & rm. 315, 15 Park Row, NY, NY. 10038. A key figure in this committee was Rabbi Rephoel Soloveitchik of Yerushalayim. His campaign against forced autopsies is detailed in: "The Battle Against Forced Autopsies" [197-253 of: The Life and Times of Reb Rephoel Soloveitchik of Brisk ,B.C. Glaberson, '99, Feldheim Pub., 357 p.]

A.2 "The Autopsy Controversy 1966-1969" p. 89-97; in: "Pressure Without Sanctions: The Influence Of World Jewry On Israeli Policy" Charles S. Liebman, 1977 "Public Committee for [the defense of]/[Safeguarding] Human Dignity" R. Yeddiya Weiner, Talmud muvak of Chazon Ish, secretary of Committee. Threatened 10,000 Yeshivalite in Kikar Shabbat if accident victim's body is not released by OCME Israel.

B Lieutenant Birnbaum: A Soldier's Story, Meyer Birnbaum with Yonason Rosenblum, Mesorah Publications 1993, 1st ed., 1st imp., p 219-226. Gives example of study conducted at Hadassah Hospital in 1959-60 of atherosclerosis in 895 autopsied patients. Anti-autopsy campaign, with Lt. Birnbaum photographing bodies of those who had received unnecessary autopsies, began in summer of '66, when "the rate of autopsies in Israel was spiraling rapidly, and had reached 80% in most of the major hospitals." p. 220 "At a mass rally on September 20, 1967, Rabbi Moshe Feinstein [said he would put a ban] on Jews living or traveling to Israel unless the Pathology Law was repealed." p.225

C. Rabbi Sherer: The Paramount Torah Spokesman of Our Era, by Yonason Rosenblum. Mesorah, '09. 621 p. Biog. of R. Moshe Sherer of Agudath Israel. P 303-6 on Netuchei Meisim, cut down unnecessary autopsies in Israel by ending the funding of research based on involuntary autopsies by the U.S. Dept .of HEW, NIH – by mid '73.

D An Autopsy Study of Myocardial Infarction in Israel Sacks, M.I., Vlodaver, Z. Dept of Pathology, The Rothschild Hadassah U. Hosp. & the Hebrew U.–Hadassah Med. Sch., Jerus.; Heart Inst., Government Hosp., Tel Hashomer & U/ of Tel-Aviv Medical Sch. ["including "material" provided by Prof. J Casper & M. Wolman, heads of pathology departments of the Beilinson and Tel Hashomer hospitals, respectively"] Pathologia et Microbiologia 1967;30:570–578 (DOI:10.1159/000161693) International Society for Geographical Pathology, 9th Conference, Leiden, Sept. 1966 "The autopsy population studied comprised 1241 cases, There were 268 infants and children, 69 young adults and 904 subjects (534 males and 370 females) aged 40 years or more . There were 289 cases of recent or healed myocardial infarction. In 174 cases the infarct was directly or indirectly the cause of the patient's death and in 115 cases it was an incidental finding in a patient dying of some other disease"

___ A Google search Apr. 6/14 shows this article had 5 citations.

Necropsy Survey of Atherosclerosis in the Jewish Population of Israel: Preliminary Report, Ungar, H., Laufer A.. From the Department of Pathology, The Hebrew University-Hadassah Medical School and the Hadassah-University Hospital, Jerusalem, Israel Pathologia et Microbiologia 1961;24:711–717 (DOI:10.1159/000161187) , 7th Conference, International Society For Geographical Pathology, London 1960. Based on a study of "an unselected series of 505 autopsies of adults of both sexes 30 years and older" Supported by Grants H-3942 and H-3942 (C-1) from the National Heart Institute, US Public Health Service.[p. 711] ___

This was apparently part of a multinational effort promoted by the [WHO] to study the nature and development of heart disease and particularly 'hardening of the arteries' or atherosclerosis. The Japanese part of this study involved more than 10,000 autopsies. Give details and references.

E Autopsy in Jewish Law and the Israeli Autopsy Controversy Tradition, V. 11 #4 p43-63, spring, '71, includes 4 page bibliography. Author, Fred Rosner, MD, Orthodox Jew, & leading expert on Jewish Medical Ethics & the Medical writings of Rambam, makes no mention of the massive international autopsy based research programs that played a key role in the controversy or of the statement attributed to R. Moshe Feinstein in M. Birnbaum's book [supra] . The article is reprinted, with no noticeable changes or new references in Jewish Bioethics, '00, Ed. by F. Rosner, J. D. Bleich, M. M. Brayer, p363-79. Dr. Rosner wasn't aware of the routine dissection of Jewish bodies at AECOM & was reluctant to believe it when I informed him of it both by phone & email[Apr.1-3/'12].

[300] There is a substantial body of research that shows adverse impacts of dissection in medical education on the mental health & compassion of medical students: See, for example: "Post-traumatic stress among medical students in the anatomy dissection laboratory". Peter Finkelstein & Lawrence Mathers, Clin. Anat. '90; 3: 219-26 *.pg. 224. "Many elements in the stories recounted … resemble … *post-traumatic stress disorder* (ptsd), a pattern of experiences and reactions following psychic trauma….the ten students whose stories we have presented are not atypical examples, …the stresses illustrated in these ten vignettes recurred in …a large fraction of the [175] students studied." Pg 221. "Students were selected at random…[from]…four classes … at Stanford University School of Medicine."; "Effects of cadaver dissection on the attitudes of medical students"; R. Charlton et al. Med. Educ. V. 28 #4 p 290-5, 7/94; Attitudes and reactions of Jordanian medical students to the dissecting room. Z. M. Bataineh et al, Surg Radiol Anat ('06) 28: 416–21 _____

There are also many who would potentially make excellent doctors but who, due to concern about inappropriate contact with cadavers, stay out of the profession. This includes both Cohanim & those to whom the dissection program is morally repugnant.

AN ORIGINAL DOCTOR JOKE

APROPOS

טוב שברופאים לגיהנם

I often related to a doctor friend -- and almost anyone who would listen -- that the crime rate in Bne Braq is extremely low. I said that if Bne Braq were the size of New York City, it would have about 1/100th of the murders per year*. I pointed out that this was even more remarkable, as Bne Braq – a city of 150,000 people -- has no police, no vigilantes and no fence. It's also in the heart of the Tel Aviv Metropolitan Area and is readily accessible by public transit, by car or on foot. To fill out the picture, the people live in what are usually considered very crowded apartments and have a per capita income less than half that of the Jews of Israel. They also have a much higher ratio of young to old than the rest of the country. Taken together, this would ordinarily be a recipe for mayhem. That they have a per capita murder rate 1/100th of what is found in NYC – which would have over 500 police for a community of Bne Braq's size -- makes the reality of extremely low crime truly phenomenal.**

My doctor friend was not impressed. He said that the rabbis control everything in Bne Braq and they use that control to conceal the murders that actually take place in the city. He went so far as to say that the real murder rate in Bne Braq was probably close to what it is now in NYC – ~500 / year for a population of 8 million or about 10 / year for 150,000.

To humor him I said, "Your right. The rabbis control everything in Bne Braq – the newspapers, the morgue, the hospitals and the doctors. They have all the murders and assaults that occur every year written up as medical malpractice!!"

In reality, there are ~1000 deaths per year in Bne Braq. This is much lower than the death rate in American cities of similar size because of the larger proportion of young children in Bne Braq. Of these 1000 deaths, roughly 2 -10 % -- or 20 to 100 -- might be due to medical malpractice if Bne Braq followed the pattern of cities in the U.S.A. So, another 10 deaths due to malpractice would hardly be noticed!! More importantly, death and injury due to medical malpractice may be far more serious in secular societies than the results of ordinary criminal acts – but the medical community in secular society is more well organized than the criminals and better able to cover its tracks.

In Bne Braq – The City of Torah -- the ordinary doctors and other medical professionals listen to the Rabbis. The main hospital in the city – מַעַיְנֵי הַיְשׁוּעָה Ma'ynei HaYeshua (Wells of Salvation)* -- specializes in maternity and follows Torah Law. It was said to have been founded in part in response to egregious medical malpractice in the birth of triplets in the nearby, secular, Tel HaShomer Hospital. Women throughout Israel – both Jewish and non-Jewish -- know that if they want the best treatment in Israel for anything having to do with maternity - where they will also be treated with respect -- the place to go is this hospital in Bne Braq.**

For more on the secular malpractice issue, see: R L Phillips, Jr, et al, "Learning from malpractice claims about negligent, adverse events in primary care in the United States" *Qual Saf Health Care* 2004;13:121-126, ___ ; "To Err Is Human: Building a Safer Health System" L T Kohn, J M Corrigan, & M S Donaldson, Ed; Com. on Qual. of Health Care in Am., Inst. of Med., 312 p, (2000),

Of course, Bne Braq really is very safe – as far as crime is concerned. For more detail on life in Bne Braq, including the extremely high level of public safety, see: METAPOLICY, THE GLOBAL SOCIETY, ISRAEL & WORLD PEACE, in the author's sefer: ובלכתך בדרך

*** This rate was based on an event that I was told had occurred in the '80's, ~10 yrs before my inquiry -- when a gangster murdered a religious Jew to get revenge on his gangster brother. ~15 yrs later -7/'12 – I used the Haaretz English database and found 3 murders in the city between 7/'01 & 7/'12 – the period covered by the database. This makes the rate for the past 11 yrs 3% of the NYC figure. None of these was a "street crime". 2 were within the religious part of the city. In both, the murderer wasn't from Bnei Brak. One only said Bnei Brak and may've been in Pardes Katz -- a mostly secular part of the city separated from the rest by a very wide boulevard that requires 2 traffic lights to cross.**

**** See, in this sefer: "HOW DID THE PEOPLE OF S'DOM GET SO BAD SO QUICKLY?"**

***** Isaiah 12:3 וּשְׁאַבְתֶּם-מַיִם בְּשָׂשׂוֹן מִמַּעַיְנֵי הַיְשׁוּעָה.**
Therefore with joy shall ye draw water out of the wells of salvation.

SEEING WHAT SEEMS MISSING[301]

II GATEWAY TO COLOR SCIENCE, PSYCHOPHYSICS, ART & DESIGN

The Mishkan – the portable tabernacle that was our center for worship in the desert when we came out of Mitzrayim & in Shiloh for 369 years[302-A.1] – is described in almost exquisite detail. Its dimensions, materials, colors, furnishings – in some cases – designs & weights are given. First, when HaShem gives instructions to Moshe. Then when the Mishkan is actually built. Among the colors, תְּכֵלֶת (blue) & purple & scarlet are mentioned explicitly. Gold, Silver & Copper are also mentioned. Different kinds of wood are mentioned & several types of fabrics & animal skins – each with their presumed natural or dyed colors-- fill out the picture.[302-A.2]

But in this extensive palette, one color is almost completely missing. This gap gives us an opportunity to recognize a special type of question. What's not in this picture that we'd ordinarily expect? Why is it missing? Where can we find it in the Torah that might give us a hint as to why it isn't where we would expect it? In this case, the missing item – the missing color -- is green [302-A.3-B].

Where can we find green in the Torah that might answer the question of why it's missing in the Mishkan? The word green –יֶרֶק – occurs only 3 times in Chumash. Each of these occurrences

SEA OF GALILEE LOOKING NE FROM TIBERIAS SHOWING THE BLUING OF HERBAGE ON NE HILLS ~15-18 KM AWAY- & SIMILARITY OF COLOR OF SEA, HERBAGE [BETW'N WHITE ARROWS] & SKY. NOTE PHOTO TAKEN TISHREI 3, 5771, 9/11/'10 4:45PM, NEAR END OF DRY SEASON, SO AREA BETW'N ARROWS IS LESS EVENLY COVERED WITH HERBAGE THAN IS USUAL.

FROM A LARGER PHOTO BY
RAZ MACHLEV
KODAK EASYSHARE M530 DIG. CAM.
4K X 3K PIXELS PANORAMIO
GET PERMISSION.
http://www.panoramio.com/photo/42059990
ON SAPPHIRE'S BLUE COLOR, SEE FOOTNOTES 127 & 122.B.6

Yeshiva in Tiberias by the Sea of Gallilee -noted in his bio, p381, "Introduction to theTalmud – History, Personalities and Background" ArtScroll Mesorah Publications. 2019, based on prior biographic cyclopedias, says in a Baraisa [Jerus.Talmud], Brochos,1.2: http://www.mechon-mamre.org/b/r/r1101.htm Sefaria, 7a, Schottenstein 10a[1]

תני בשם ר"מ וראיתם אותה אין כתיב כאן אלא וראיתם אותו מגיד שכל המקיים מצות ציצית כאלו מקבל פני שכינה מגיד שהתכלת דומה לים והים דומה לעשבים ועשבים דומין לרקיע ורקיע דומה לכסא הכבוד והכסא דומה לספיר

"It was taught in a Bariasa in the name of R. Meir 'and you shall see her' is not written here; Rather 'and you shall see him' This relates that anyone fulfilling the mitzvah of tzistzis is as though he has greeted the countenance of the Shechina. Because techeles resembles the sea, and the sea resembles herbage and the herbage resembles the sky and the sky resembles Throne of Glory and the Throne resembles the Sapphire." based on Schottenstein Jer. Tal.10a[1]

This suggests that תכלת *is associated with green herbage. The Vilna Gaon emends the text, omitting '... herbage...' making it like the Bavli, Menuchos 43b:*

תניא היה ר' מאיר אומר מה נשתנה תכלת מכל מיני צבעונין מפני שהתכלת דומה לים ים דומה לרקיע ורקיע לכסא הכבוד שנאמר ותחת רגליו כמעשה לבנת הספיר[1] וכעצם השמים לטהר וכתיב[2] כמראה אבן ספיר דמות כסא

"It was taught: R. Meir used to say, Why is blue specified from all the other colours [for this precept]? Because blue resembles the colour of the sea, and the sea resembles the colour of the sky, and the sky resembles the colour of the Throne of Glory, as it is said, And there was under his feet as it were a paved work of sapphire stone, [1.Ex. 24:10] and it is also written, The likeness of a throne as the appearance of a sapphire stone."[2. Ezek. 1:26] _____

[also similar to Sotah 17a & Chulin 89a – all in the name of R. Meir.] However, our sages of the Yerushalmi in Tiberias, looking NE to the green hills across the Kinneret, saw sea, herbage & sky - all blue. [Ramban, at Bam. 15:38, says these look similar from afar & techelis reminds us of תכלית *tachlis* – all. אבל הזיכרון הוא בחוט התכלת, שרומז למדה הכוללת הכל שהיא בכל והיא תכלית הכל. See Job 11:7-8 אִם עַד-תַּכְלִית שַׁדַּי תִּמְצָא. גָּבְהֵי שָׁמַיִם ...the ultimate of God... is as high as heaven...] Actually *seen by the author, 12/21/14, 2-3PM.] The blueness of the herbage on those hills is caused by the phenomena that make the sky blue – scattering of sunlight by molecules of air– blue light is scattered ~10X red. Note: Chazal say: 1. sea – a large expanse of water; 2. Herbage - bare land in Israel wouldn't look blue. 3. But why doesn't the herbage look blue-green? We're seeing* עשבים*-herbage, not just* דֶּשֶׁא*-grass [Ps 23:2] – from the side. With sun in avg. position, much is in the shadow of the leaves above-unlike plain grass. Herbage, up close, would look dark green. Dark green covered with bright sky-blue is very close to sky-blue.* [See A Practical Analytic Model for Daylight, A. J. Preetham, '99, Proc. 26th An. Conf. on Computer Graphics and inter. Tech.. P. 91-100] _____

B.[ADDED 8 IYAR 5770, NYC] Some say the Mishkan includes green, in the "tachash" skin cover or Breast-plate gem stones . SEE, IN THIS SEFER :WHAT WERE THE "TACHASH SKINS" עֹרֹת תְּחָשִׁים p 195-208. The חֹשֶׁן מִשְׁפָּט "breastplate of judgment" [SHEMOS 28:15 & 39:8-13; Lev. 8:8] worn by the Kohen Gadol – High Priest –had some jewels that were greenish:

וּמִלֵּאתָ בּוֹ מִלֻּאַת אֶבֶן, אַרְבָּעָה טוּרִים אָבֶן: טוּר, אֹדֶם פִּטְדָה וּבָרֶקֶת--הַטּוּר, הָאֶחָד.

And thou shalt set in it settings of stones … topaz,"**SHEMOS 28:17-20.**

Pidta פִּטְדָה translated here as topaz, is also given as emerald. It was the stone of the tribe of Shimon, whose flag, like the stone, was green: Bamid. Rabbah 2.7. With all this, the High Priest would don the garments in his tent outside Mishkan; change into all white linen garments for part of the Yom Kipur service [Lev 16:4,23,32]; &, in special circumstances, leave the Mishkan & the camp wearing all the vestments. This was the case, both at the death of Aaron [Bamid. 20:28]

וַיְפַשֵּׁט מֹשֶׁה אֶת-אַהֲרֹן אֶת בְּגָדָיו, וַיַּלְבֵּשׁ אֹתָם אֶת-אֶלְעָזָר בְּנוֹ, וַיָּמָת אַהֲרֹן שָׁם, בְּרֹאשׁ הָהָר; וַיֵּרֶד מֹשֶׁה וְאֶלְעָזָר, מִן-הָהָר.

'And Moses stripped Aaron of his garments, and put them upon Eleazar his son; and Aaron died there in the top of the mount.'

and when Shimon Ha Tsadik met Alexander the Great [Yuma 69a]. So the breastplate wasn't an integral part of the Mishkan. Could the High Priest wear the golden clothes outside the Mishkan based on Tamid at Shem. 28:29,30,36.– or would Shatnez in the sash אבנט [Lev 39:29] prohibit this?

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[301] [From#102, not in sefer] Conceived on hearing of ptera of Edwin Land[nifter 15 Adar,Ki Sisa[Mar 1]5751, same parsha as my father, [1st mention of Bezalel,] 16 Adar, 5740] while reading about mishkan in Vayak'hel-Pekudei (Ex.35:1-40:38). From frum Mishpoche & revolutionized color science with his Retinex theory. At '77 Polaroid An'l Mtg he famously said, 'The Bottom Line is in Heaven' More on Edwin Land in: A SIGN FOREVER.[Footnote 302-A added 12 Adar 2,5774, Yerush.]

[302] A.1 T. Bav. Zev.118. A.2 [Shem. 25-28,35,36,38,39 & Num.4] A.3 At 1st mention of תְּכֵלֶת in Torah [Shem.25:4], Rashi writes: תכלת: צמר צבוע בדם חלזון, וצבעו ירוק. At the parsha of tsitsis, where the Torah says "וְנָתְנוּ עַל צִיצִת הַכָּנָף פְּתִיל תְּכֵלֶת"...*and they shall affix a thread of sky blue [wool] on the fringe of each corner"* [Bam. 15:38] Rashi has: תכלת: צבע ירוק של חלזון. The standard transl. here is blue or blue-green. But, at the last verse of same chap. [15:41], he brings what he says he copied from Moshe HaDarshan:[11th cent. Narbonne, Fr.] who links the word with the death of the Egyptian first born at night: [text, translation & cf, from Sefaria]

"על שם שכול בכורות תרגום של שכול תכלא. ומכתם היתה בלילה וכן צבע התכלת דומה לרקיע המשחיר לעת ערב"

"...the colour תכלת resembles the sky when it darkens at eventide..."

But, if Moshe HaDarshan wanted to say Techeles is the color of the night or evening sky, he'd say it directly. Rather, he's linking sky color – with its cyclical darkening-- to the time of death of the first born. (cf. Sifrei Bam. 115:1; Menachot 43b)

Rambam, writes: תכלת האמורה בתורה בכל מקום היא הצמר הצבוע כפתוך [שבכוחל] שבכחול וזו היא דמות הרקיע הנראית לעין השמש בטהרו של רקיע

"The term *techelet* mentioned throughout the Torah refers to wool dyed light blue - i.e., the color of the sky which appears opposite the sun when there is a clear sky...". Mishneh Torah, Hilchos Tsitsis, 2.1. _____ Exemplary sky blue is opposite the sun when it's in an avg. position - not near the horizon or noon. This is also close to the color of the generally clear Sea of Galilee. The bluest patch of sky for which complete data were shown [CIE coordinates x=.245, y=.248] in a colorimetric study of the sky in Grenada, Spain, is 45-75° above the opposite horizon when the solar elevation is ~19°. Other parts of the sky are more white, distributed roughly along the CIE daylight locus – just above the Planckian locus. See Colorimetric and spectro-radiometric characteristics of narrow-field-of-view clear sky-light in Granada, Spain, Hernandez-Andres, Romero & Lee,JOSA.A 2/'01. _____]At least 2 of the most important ms lack the word for 'sun':[Bodleian, MS Hunt 80_141b, ch.2____& Heb.U. Illum. MS, 1300-50, p48 _____. However, R. Meir - רַבִּי מֵאִיר -Tanna, student of R. Akiva, 3rd most freq. mentioned sage in the Mishnah, & who had his own

should give some insight into why it's missing in the Mishkan. One of these three actually involves another special dwelling place. Our Mishkan in the Desert & Shiloh was a place for God to dwell in the midst Human Beings. The special dwelling place with green in it is actually a mishkan – complete with כְּרֻבִים cherubim[303A] -- like our Desert Mishkan. In this other mishkan, green is the only color explicitly mentioned when it was first built. This other mishkan is the whole world – where Gan Eden had "…*every green plant for food*…" --

"…אֶת־כָּל־יֶרֶק עֵשֶׂב לְאָכְלָה …" [247 B]

- a special place for Adam to dwell in the midst of God's creation.

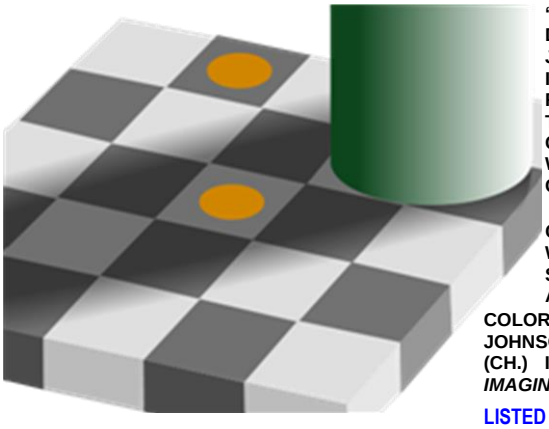
Green is the complement of all the other colors. With green and all the other colors in due proportion, we can create white – and every hue that we can see. So also is our Desert Mishkan -- the dwelling place we made for God -- the complement of the Mishkan God has made for us. When we combine these two and see them as complementary, the creation is truly complete. But green—grass green, herb green – isn't just another color among equals. It has a special place in the spectrum of our awareness. It is at the center of the range of colors we can see – the color to which our eyes are most sensitive. So also must the work of God be central to our lives. The beautiful dwelling place that we make for God in our midst completes the picture – but it's not the works of Man – it's God's work that must always remain at the center of our awareness.

[303] **A.** Gen 3:24 **B.** Gen 1:30; Green is also found in Gen 9:3: כְּיֶרֶק עֵשֶׂב 'green herb' & Exod. 10:15 כָּל-יֶרֶק בָּעֵץ וּבְעֵשֶׂב הַשָּׂדֶה 'green thing, either tree or herb of the field'. Greenish יַרְקְרַק is found in Lev. 13:49 & 14:37. [also Ps. 68:13 for greenish gold]. Esther is called pale – with the expression "אסתר ירקרוקת היתה" [Meg.13a] [Maybe a result of greens & seeds diet adopted [ibid] to avoid eating anything that wasn't kosher, eg: meat, dairy & tree fruits or nuts – the latter because of Orla [Lev. 19:23-25 prohibiting use of tree fruit in 1st 3 or 4 yrs—even outside of Israel]. Like Esau called red/Edom from eating red lentils [Gen.25:30]. Purim Torah] The word יָרוֹק -- *green* –is found only once in Tenach: Job 39:8 : יְתוּר הָרִים מִרְעֵהוּ; וְאַחַר כָּל-יָרוֹק יִדְרוֹשׁ. *"The range of the mountains is his pasture, and he searcheth after every green thing."* A seemingly unrelated word with the same apparent root: יָרַק - means "spit" [Num 12:14, Deut 25:9]. The most common form of 'spit' in the life of our shepherd ancestors was the spit-up cud of cattle – the same green as the herbage they'd eat.

See also, in this sefer : THE COLOR OF KINDESS

The fig. at right shows the **Relative Sensitivity Function** of the typical human eye for daylight or photopic vision superimposed over an approximation of the colors of the visual spectrum. The white & gray lines are for fields of view of 2°& 10°, resp.. Both should have more of a bulge toward the blue than is shown here. The black line is the relative sensitivity function for dark adapted, 'nightlight' or scotopic vision. Scotopic vision is color blind. It's clear from this that the color our eyes are ordinarily most sensitive in daylight to a typical leaf or grass green – the color of most vegetation – the color of the green herbs of Creation. ____

Fig. below right, shows sensitivity of rods, primarily responsible for dark adopted night vision, at its peak in deep bluish-green, is >200X peak in "grass green" of the cones which provide most our daylight vision. There's much interpersonal variability.____Also, subconscious blue sensitive circadian rhythm receptors in retinal ganglion cells help synchronize our metabolism to the cycles of the sun.



"THE BROWN & ORANGE DISKS OF COLOR ARE OBJECTIVELY IDENTICAL, IN IDENTICAL GRAY SURROUNDS, IN THIS IMAGE; THEIR PERCEIVED COLOR CATEGORIES DEPEND ON WHAT WHITE THEY ARE COMPARED TO."

COPIED 2/14/'13 FROM WIKIPEDIA ON BROWN. SOURCED FROM : "VISUAL PSYCHOPHYSICS AND COLOR APPEARANCE," G. M. JOHNSON & M. D. FAIRCHILD, (CH.) IN *CRC DIGITAL COLOR IMAGING HANDBOOK*,115–71, '03.

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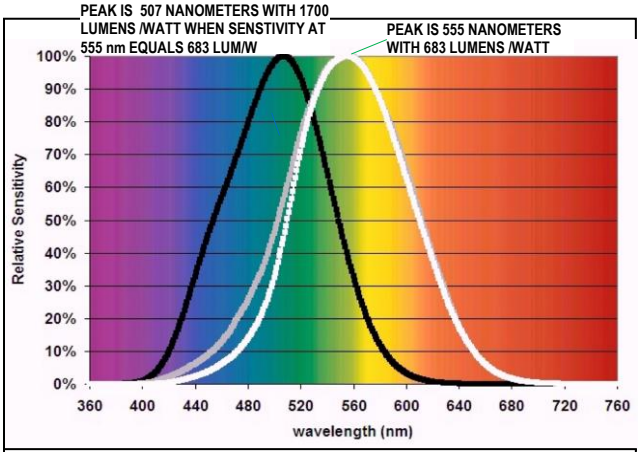
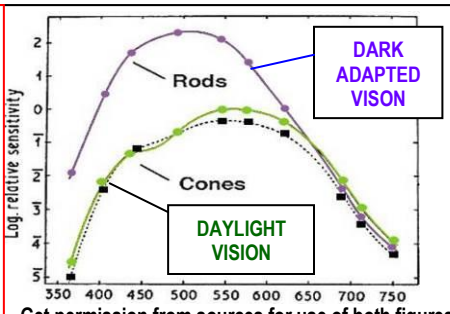
http://en.wikipedia.org/wiki/File:Optical_grey_squares_orange_brown.svg



PURPLE AND BROWN, NOT SHOWN, ARE NOT SPECTRAL COLORS. PURPLE IS BLUE + RED AND HAS A RELATIVE SENSITIVITY [RS] SIMILAR TO THOSE TWO COLORS. BROWN IS YELLOW, ORANGE OR RED+ BLACK AND HAS AN RS LESS THAN YELLOW, ORANGE OR RED, RESEPECTIVELY.

BUT SEE FIGURE AND EXPLANATION BELOW LEFT TO APPRECIATE HOW THE PERCEPTION OF BROWN AND YELLOW DEPEND ON WHAT ELSE IS IN THE PICTURE .

THE LOW SENSITIVITY OF DARK ADAPTED RODS ALLOWS USE OF 100FC RED LIGHT FOR GOOD VISION & RETURNING 3X QUICKER TO FULL DARK ADAPTION. "TIME OF DARK ADAPTATION AFTER STIMULATION BY VARIOUS BRIGHTNESSES AND COLORS" E. O. HULBURT JOSA, V. 41, #6, p. 402-3 '51, CITED BY 26 _____



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THE COLOR OF KINDNESS

II GATEWAY TO GENETICS, NEUROSCIENCE AND THE LIMITS OF LANGUAGE

With all of the attention that's given in the Torah to color – particularly in the construction of the Mishkan[304-A] – we might well wonder what the function of color blindness is in understanding the Derech HaShem – the Way of God. The question becomes more pointed when we realize the apparent complementarity of the colors of the Mishkan built by human beings and the single color – green- mentioned in the Mishkan built by God for us – Gan Eden[304-B]. The question is even more salient because the most common form of color blindness includes an inability to tell red from green[304-C].

We learn in Perkei Avos: "Who is Wise? One who learns from everyone" [304-D]. What can we learn from the color blind person and from color blindness in general? We learn that there are profound differences between people in our basic perception of the world. Some of these differences – like color blindness – are usually inherited. Some basic aspects of the world that most of us take for granted, others can't perceive at all. Not only can they not perceive these things, but it is all but impossible to provide such people with a convincing explanation of what they are missing. How do you explain the nature of red or green or blue to a person who can't tell them apart? How do you explain the nature of color to a person who perceives no color at all?

Though these are profound questions that go to the heart of our experience of the world and our ability to communicate with others, they raise even greater questions. What if there are colors that only a few can see and the great majority of us are completely blind to? [304-E] We can take this beyond visual colors, to sound – "tone deafness" – other senses and to general experiences of life. There may be some "colors" of life that are very important to the functioning of the world -- to the appreciation of the Derech Hashem -- that only a few are capable of seeing clearly and the rest of us are all but unaware of. Just as there is a small fraction of the human race that is almost incapable of appreciating the suffering of others [304-F], so there may be a small number who are extremely sensitive to other's needs. There may be those who are able to see clearly what the kind and just path is while others may not even be able to appreciate what it means to be kind and just at all.

The existence of color blindness leads us to see that our G'dolim – the great leaders of the Jewish People in each generation – have the capacity to see the "colors" of kindness and the "colors" of the holiness of mitzvahs with an intensity that most of us can hardly imagine. They are our pilots in our foggy world. They can see and point out the Derech Hashem when, often enough, we would see it on our own only with very great difficulty.

II THIS CAN BE A GATEWAY to studying genetic & environmental influences on how we think & perceive the world, including synaesthesia, paresthesia & the paradoxes of language: qualia.

See also in this sefer: **SEEING WHAT SEEMS MISSING; CHROMATICY DIAGRAM; TRUE AND FALSE**, partic. footnote A., **BOWING SEVEN TIMES--BUT NOT EIGHT & THE DIMENSIONS OF WISDOM,** see footnote 562-A

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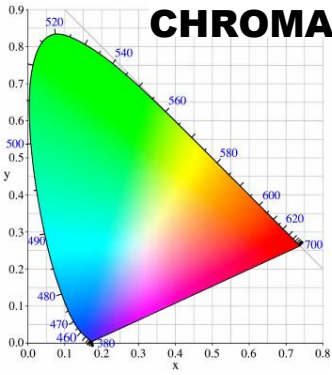
304 **A.**[Shem. 25:4,26,27, 28:5,35,36,38,39; & Num. 4]. **B.** Gen 1:30. **C.** The earliest account of color blindness in scientific tradition is usually given as "Extraordinary facts relating to the vision of colours", 10/31/1794,John Dalton [1766–1844]. He'd a form of red-green colorblindness – deuteranopia – afflicting ~1% of men. He didn't notice his unusual color vision until his early 20's. _____ _____. [Rashi uses ירוק as translation of תכלת in T. Berachos 57b where a Beraisa says any kind of color is favorable in a dream except תכלת. Rashi says it's the color of sickness. He uses 'lazur' in T. Hul. 47: 'צבע כחול שהוא כמראה לזור לא ירוק ולא שחור ככוחלא: ...the color blue like the appearance of azure, not green & not black.' At Shem. 10:15 he uses 'viridura' 'כל ירק: עלה ירוק וירדורא... green leaf - greenery'. See: 'Étude sur les couleurs en vieux français', André G. Ott, 1899 _____ Why didn't Rashi use unambiguous colors like these for תכלת? צריך עיון. Maybe Rashi had difficulty distinguishing blue from green? [seeing colors similar to those shown at left_____] & didn't realize it? It's both a rare inherited condition [<0.01%] & a rare acquired condition sometimes caused by a blow to the back of the head.[Incidence of congenital colour vision defects..., JM Steward, BL Cole - Colour Vision Deficiencies IX, 1989,~7K subjects _____ Color vision deficiency in a middle-aged population...; Jafarzadehpur E, et al, Int. Ophthalmol. 2/14/14, _____~5K subj. *Traumatically acquired color vision defect R. S. L. Young, et al,* Invest. Ophthalmol. Vis. Sci. 5/80 ____ A. Bartels, S. Zeki *The architecture of the colour centre* Eur. J. Neurosci. 12(1),172-93 '00 _____] However, the Cohanim were required to distinguish אֲדַמְדָּם reddish or יְרַקְרָק greenish discolorations in a house, garment or leather utensil afflicted with צָרַעַת – [Lev 13:49, 14:37] a condition associated with improper speech. [Talmud (*Arakhin* 15b)] In the Talmud [Shevu'oth 6a] on the qualifications to judge forms of Tsaraas: "a priest who is not well versed in them & their names is not competent to inspect the leprous shades." The inclusion of "& their names" shows recognition of color blindness –inability to match names with conditions – by those who think that they can. [Thanks to Yisroel Wolf, Yerush. 24 Adar B, 5774. A recent paper on anomalous color vision in Halacha is: Partial Color Blindness and Rabbinic Examination of Blood" R. Mordechai Halperin, Jewish Medical Ethics and Halacha, V.. VII, 1 6/09, p51-60 **D.** בן זומא אומר, איזה הוא חכם-- הלמד מכל אדם [Perk Av., 4:1] There's also a Mishna ,[P. Av. 2:9] - on the heritablity of moral and intellectual 'vision': *"Rabban Yochanan ben Zakkai ...used to say: If you have learnt much Torah do not claim for yourself moral excellence, for to this end you were created."* Down's syndrome helps confirm this. **E.** Tetrachromatic – enhanced color vision..: The dimensionality of color vision in carriers of anomalous trichromacy J. of Vision,'10, 10(8):12, 1–19, G Jordan, et al.: _____ **F.** This may've been the nature of Esau. He sold his birthright for a bowl of lentils [Gen 25:24-34] & was blind to its spiritual value. [Said at Abraham & Sarah's Tent, Toldos, 5773.]

CHROMATICITY DIAGRAM [305]



– designed so that colors on the periphery of the horseshoe combine to form white if a straight line between a pair of such colors passes through the white zone in the diagram. Thus, straight lines from deep blue to yellow & from purple to green pass through the white zone & combine – as light beams, not paint – to form white. Straight lines that pass through the white zone - but between colors that aren't on the periphery -show these colors also combine to form white. In this case, the relative amount of each color that must be added to yield white is inversely proportional to the distance of the color from the white point[306].

If we take two special colors found in Torah, techeles & the color of the para aduma -- probably close to the actual color of the molten calf -- we also get colors that combine to form white.[307]

[Cohanim –can't be baal mum [Lev 21:16-23]– a sign of 'Seder' but no compulsory retirement age[seder gets better with repetition/age] —plus Simcha/Music of Levi'im: allows baal mum but has compulsory retirement age [Innovative music/simcha can 'burn out' with age] [Num 4:3; 8:24-26][from leyl Shab Drosh. of Y. Breitowitz, 5778]=Israel: analogous to Shabbes Laws+Avroham's Kindess – which we practice on Shabbes; also: orderly 'rest' + simcha = 'light of the Jews' מְנוּחָה וְשִׂמְחָה אוֹר לַיְּהוּדִים. So Shabbes combines these Lights –&, like the 'Stars in Heaven', is a 'Sign Forever' of Israel.]See also **COLOR OF KINDNESS & SEEING WHAT SEEMS MISSING** & see footnotes 349& 365]

[305] Colors in Diagram are only an approximation of the true colors: from Encyclopedia Britannica. https://www.britannica.com/science/color

[306] From description of 'law of the lever'p12-13, in: 'Fundamentals of Color Science', Kurt Nassau,p1-30, in:'Color for Science, Art and Technology',K.Nassau, edit.,'98, Elsevier

[307] A. Sh25:4,28:5;35:6;38:23;Bm4:6;15:38;19:2;Jer10:9;Ez23:6;27:7,24;Est1:6;8:15;2Ch2:7;3:14+more]Thought of 1/29/17, Yesh. Ohr Somayach at R. Yitzchak Breitowitz's sheor on 'Tomer Devorah' by R. Moshe Cordovero [1522–70, probably all in Safed. Isaac Luria Ashkenazi –the Ari(1534-72)& R.Yosef Karo[1488-1575]also lived in Safed –from 1569 & 1535, resp. See footnote 279]R. Breitowitz had noted that some cabalists link blue with chesed [linked with the sky & 'throne of God' –the source of chesed? See footnote 302-A.3 & 388]& red with gevura [assoc. w. Para Aduma [Bm19:1-9] –like Olah-wholly burned [Lev.1:3-9] See **AKEDUS YITSCHOK: AS I WILL TELL YOU**]. We learned previously Avroham is assoc. w. Chesed, Yitschok: Gevura & Yaakov: Emes – the best balance of the two.

B. I thought of this because, when I heard R. Breit. say blue & red, I didn't think of saturated spectral colors but colors connected with these words in kabbalah. I first saw this link in 'La cascade des couleurs au fil des Sephirot', Jérusalem, 5776, the sefer of R. Yosseph Chouchan-הרב שושן זי"ל : These colors—printed in the book-- included what reminded me of the red of the para aduma & the blue of techeles & had little of the saturated blue or red. The sefer, [p 42-3] gives several traditional opinions on which colors are associated with the three patriarchs. R. Chouchan showed me his sefer shortly after it was printed. He was nifter unexpectedly ~1 month later [6 Jan/'16-כ"ה טבת תשע"ו] May this piece, conceived ~1 year from his ptera, be לעילוי נשמת -for the elevation of his soul.

C. Later, I saw that there are 2 types of "kabbalah": a. books like Tomer Devorah -- & b. "Hidden in Plain Sight": e.g. from Chumash -- Mishkan built by natural law [see **RINGS OF GOLD**]; from Chazal- on "miraculous" nature of plain cold water see footnote 614-B. The basic idea came from a song of my father, Yitschok Oorie b. Levi Yitschok, "The Lion Was A'Shivering", a history of WWII told as an animal allegory for children. Each animal represents a specific nation. Just one phrase hints at this: "Foxy French Rena'd". Only when I was 8 yrs old & asked why the fox was French did my father explain each animal as I asked about it. I never asked about the lamb: I thought it meant any weak nation. I didn't know that Jews are called '…A Lamb Among 70 wolves' (Tanchuma 5:3) אַדְרַיְאנוֹס אָמַר לְרַבִּי יְהוֹשֻׁעַ, גְּדוֹלָה הַכִּבְשָׂה הָעוֹמֶדֶת בֵּין שִׁבְעִים זְאֵבִים.

If I'd known, I would've seen that in "The Lamb would have to be as strong to keep her Golden Fleece", the "Golden Fleece" was Torah. I also didn't know that my father, as a teenager, learned with his uncle, R. Yoseph Adler, 9th in a line of Rabbis from father to son & counted among the G'dolai HaDor [See sefer **A Sign Forever**]

GRASSHOPPERS AND GOVERNMENT [308]

IIGateway to Biophysics & Social Physics

We all imagine we know what a grasshopper is – an insect that hops on large hind legs, flies, eats grass and is usually about one to two inches long. Sometimes, as we read in Vayikra 11:21-22, grasshoppers may even be kosher[309]. Grass-hoppers in Torah are also a byword for a small, weak creature – as we see at Bamidbar 13:33[310].

וְשָׁם רָאִינוּ, אֶת-הַנְּפִילִים בְּנֵי עֲנָק--מִן-הַנְּפִלִים; וַנְּהִי בְעֵינֵינוּ כַּחֲגָבִים, וְכֵן הָיִינוּ בְּעֵינֵיהֶם.

And there we saw the Nephilim, the sons of Anak, who come of the Nephilim; and we were in our own sight as grasshoppers, and so we were in their sight.

But why should grasshoppers be so small? Why don't we find grasshoppers the size of a man – or bigger? Such a grasshopper might be able to jump over a five story building – or so we might imagine. It turns out that grasshoppers work very well at the size they actually have but would not work at all if they were very much larger – or smaller. If they were the size of man, for example, 50X longer than the usual grasshoppers, their volume would increase by 50 X50X50=125,000. Their weight would increase by the same ratio. The strength of their legs, however, would only increase by 50X50=2,500 – because strength is a function of the cross section, not the volume.

[308] This piece was inspired in part by something that my father taught me about the "grasshopper the size of a man " when I was seven. See sefer "אות הוא לעלם / A Sign Forever" for details. See also comment on the billion ton re'em at footnote 716.

[309] אַךְ אֶת-זֶה, תֹּאכְלוּ, מִכֹּל שֶׁרֶץ הָעוֹף, הַהֹלֵךְ עַל-אַרְבַּע: אֲשֶׁר-לֹא (לו) כְרָעַיִם מִמַּעַל לְרַגְלָיו, לְנַתֵּר בָּהֵן עַל-הָאָרֶץ. אֶת-אֵלֶּה מֵהֶם, תֹּאכֵלוּ--אֶת-הָאַרְבֶּה לְמִינוֹ, וְאֶת-הַסָּלְעָם לְמִינֵהוּ; וְאֶת-הַחַרְגֹּל לְמִינֵהוּ, וְאֶת-הֶחָגָב לְמִינֵהוּ.

Yet these may ye eat of all winged swarming things that go upon all fours, which have jointed legs above their feet, wherewith to leap upon the earth; even these of them ye may eat: the locust after its kinds, and the bald locust after its kinds, and the cricket after its kinds, and the grasshopper after its kinds.

[310] **A similar sentiment is given is Isaiah 40:22:**
הַיֹּשֵׁב עַל-חוּג הָאָרֶץ, וְיֹשְׁבֶיהָ כַּחֲגָבִים; הַנּוֹטֶה כַדֹּק שָׁמַיִם, וַיִּמְתָּחֵם כָּאֹהֶל לָשָׁבֶת.

"It is He that sitteth above the circle of the earth, and the inhabitants thereof are as grasshoppers…"

This means that each square millimeter section of the giant grasshopper's legs would have to support fifty times as much as each square millimeter section of the small grasshopper's legs. Instead of being able to jump over a building, the giant, man-sized grasshopper would collapse under its own weight.

The oxygen that its body needs would also be proportional to the volume – 125,000X what the normal sized grasshopper required. The surface openings for air would only increase by 2,500 in area. Either the air would have to rush through these openings at 50 times the normal speed or the grasshopper would suffocate. Since the grasshopper's breathing system has nothing to force air in and out at such speeds and would probably be destroyed in any event by the impact of such gale force winds, the collapsed grasshopper would soon expire. Eating would present a similar challenge – with similar results – though the collapsed giant grasshopper would suffocate long before it would otherwise starve to death.

The question of why we don't find grasshoppers the size of a man applies to the design of all creatures and to the social systems that the creatures form. It applies whether the creatures are microscopic single cells or the size of human beings. It applies in particular to the structure and function of government.

If a group consists of three people, for example, it is easy to see that it would take a relatively short time for each of the three to be heard on any given topic. But what if there were thirty, or three hundred or even three million? If each of three million people spoke for just one minute, and only one person spoke at a time, it would take six years of talking day and night for each person to be heard. A society that operated like this would soon collapse – like our man-sized grasshopper.

This was, in essence, the observation of Yithro, Moshe's father in law. He saw Moshe sitting alone, listening to the questions of the entire Jewish people. He'd sit all day and the people would come to him – each waiting for many hours for the opportunity to speak. [311] Yithro said [Shemos 18:18]:

נָבֹל תִּבֹּל--גַּם-אַתָּה, גַּם-הָעָם הַזֶּה אֲשֶׁר עִמָּךְ: כִּי-כָבֵד מִמְּךָ הַדָּבָר, לֹא-תוּכַל עֲשֹׂהוּ לְבַדֶּךָּ.

Thou wilt surely wear away, both thou, and this people that is with thee; for the thing is too heavy for thee; thou art not able to perform it thyself alone.

He proposed instead that Moshe establish a different and more effective system:

וְאַתָּה תֶחֱזֶה מִכָּל-הָעָם אַנְשֵׁי-חַיִל יִרְאֵי אֱלֹהִים, אַנְשֵׁי אֱמֶת--שֹׂנְאֵי בָצַע; וְשַׂמְתָּ עֲלֵהֶם, שָׂרֵי אֲלָפִים שָׂרֵי מֵאוֹת, שָׂרֵי חֲמִשִּׁים, וְשָׂרֵי עֲשָׂרֹת.

Moreover thou shalt provide out of all the people able men, such as fear God, men of truth, hating unjust gain; and place such over them, to be rulers of 1000's, rulers of 100's, rulers of 50's, and rulers of 10's. **[SHEM 18:21]** [312]

The result would be that the judges at every level of society would actually know the people they were judging – or they would know the people who had judged the case at the next lower level. Hundreds of situations could be addressed simultaneously and people's time would not be wasted.

These judges[313] were also to be provided "out of <u>all</u> the people" and selected by the people[314].

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[311] **Shem. 18:13:** **וַיְהִי, מִמָּחֳרָת, וַיֵּשֶׁב מֹשֶׁה, לִשְׁפֹּט אֶת-הָעָם; וַיַּעֲמֹד הָעָם עַל-מֹשֶׁה, מִן-הַבֹּקֶר עַד-הָעָרֶב.**

And it came to pass on the morrow, that Moses sat to judge the people; and the people stood about Moses from the morning unto the evening.

[312] **Also Devarim 1:15-16:**

וָאֶקַּח אֶת-רָאשֵׁי שִׁבְטֵיכֶם, אֲנָשִׁים חֲכָמִים וִידֻעִים, וָאֶתֵּן אוֹתָם רָאשִׁים, עֲלֵיכֶם: שָׂרֵי אֲלָפִים וְשָׂרֵי מֵאוֹת, וְשָׂרֵי חֲמִשִּׁים וְשָׂרֵי עֲשָׂרֹת, וְשֹׁטְרִים, לְשִׁבְטֵיכֶם. וָאֲצַוֶּה, אֶת-שֹׁפְטֵיכֶם, בָּעֵת הַהִוא, לֵאמֹר: שָׁמֹעַ בֵּין-אֲחֵיכֶם וּשְׁפַטְתֶּם צֶדֶק, בֵּין-אִישׁ וּבֵין-אָחִיו וּבֵין גֵּרוֹ.

So I took the heads of your tribes, wise men, and full of knowledge, and made them heads over you, captains of thousands, and captains of hundreds, and captains of fifties, and captains of tens, and officers, tribe by tribe. And I charged your judges at that time, saying: 'Hear the causes between your brethren, and judge righteously between a man and his brother, and the stranger that is with him.

[313] **They're not actually called "judges" but 'captains' (or ministers)- שָׂרֵי & 'officers'- שֹׁטְרִים – though part of their function is to 'judge righteously'- שְׁפַטְתֶּם צֶדֶק. At Dt 16:18, however, we learn "You shall appoint judges and officers in all your gates, which the LORD your God gives you, according to your tribes, and they shall judge the people with just judgment. שֹׁפְטִים וְשֹׁטְרִים תִּתֶּן-לְךָ בְּכָל-שְׁעָרֶיךָ... The mishna in Sanhedrin (1:6) rules that in the Land of Israel this obligation extends all the way down to the smallest village of 120 adult males. [Give details, Rambam, Mishneh Torah, etc]**

They mustn't be foreigners imposing a foreign standard. They must not represent just part of the people and they must not be imposed by force from the top down. The leaders of thousands – those closest to Moshe – closest to the G'dolim in each generation -- are mentioned first. The tone and law of the society emanate from the G'dolim and are passed along systematically to increasing numbers of people who are less renowned by the community as a whole but well known and highly respected within their more local spheres.

In this way, everyone knows who the G'dolim are. They are the ones whose decisions become widely known for their wisdom & whose deeds & character most exemplify Torah values. The leaders of thousands are those who are seen to be closest to these G'dolim – both in the extent of their personal contacts and in the quality of their character and decisions. The leaders of hundreds, fifties and tens have corresponding connections to those who are more renowned than they. It works without 'state recognition', 'majority consent' or 'the power of guns'. guns

That the system does not proceed only by factors of ten – but includes leaders of fifties between tens and hundreds – suggests that a degree of flexibility is good. Society and its problems are multidimensional. Many of the leaders at whatever level of renown may be excellent at solving some types of problems but less able to solve problems in other areas. By having a flexible system and not a strict hierarchy based on exact calculations – the people will be better able to find the best leaders to solve the problems that arise.

Such flexibility also allows for the occasional unavailability of the person who might be the best in a given local community. We don't have to wait for that person – we can go to someone else – either in a different, nearby, community or at a greater level of renown[315].

At the high end – between the leaders of thousands and the tribal leaders – with each tribe having on average 50,000 adult men – there is also a break from exact multiples of ten. This may be a recognition that at the highest levels, leaders are usually more able to have high quality direct knowledge of the character of more people- compared with those at lower levels. Top professors may know the content of over 500 books -- while an ordinary teacher may have reliable knowledge of 50 or less.

Today, this system is at work to a great extent in Bnei Braq, Israel, a city of over 160,000 in the heart of the Tel Aviv Metro area.[316] [CONTINUED]

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[314] **Shem. 18:21, above, & Dev. 1:13:** הָבוּ לָכֶם אֲנָשִׁים חֲכָמִים וּנְבֹנִים, וִידֻעִים--לְשִׁבְטֵיכֶם; וַאֲשִׂימֵם, בְּרָאשֵׁיכֶם.

'Get you, from each one of your tribes, wise men, and understanding, and full of knowledge, and I will make them heads over you.'

[315] **50 here, as elsewhere in Torah represents the 8th septanate and the 8 directions – above the natural order which is represented in Torah by 7. Eight includes the ability to go back in time. It includes the dimension of repentance and correction of the world. The leaders of 50 are able to move in all 8 directions. Geographically, they could move forward and backward and left and right. Socially, they could move up and down – from leaders of 1000's and 100's to leaders of 10's. They also moved forward and backward in time. They could be scheduled in advance or they could fill in or be substituted for others who had been scheduled in the past or who had been called to judge but had proven inadequate. This is related to the general management concept of "span of control"**

See also in this sefer: A. MITZVAH IMMERSION; B. BOWING SEVEN TIMES – BUT NOT EIGHT; C. THE DIMENSIONS OF WISDOM.

[316] **A.** **The system in Bnei Braq is made up of two parallel forms of government. One, based on G'dolim, is somewhat similar to what is described here. The G'dolim aren't elected or appointed and, for the most part, don't inherit their positions. They arise out of the people based on merit. Parallel to this system is another system that is largely imposed on the people by the State of Israel. This state based system came with police – but as they didn't follow Torah Law, they were expelled from the city. There are now,['99] reportedly only five police for the City of Bnei Braq – supplied by the State of Israel – all stationed in the neighboring town of Ramat Gan. In NYC, there are ~500 police/160K people. For more on this, see: "AN ORIGINAL DOCTOR JOKE" in this sefer and a video of the author at ____ . [Video taken private by videographer after coming 1st on Google with the separate words: Israel peaceful city]**

B. **That the G'dolim -- the great Torah Scholars -- are responsible for the peace of the city, while the police & politicians are responsible for the opposite of peace, is brought out in a famous midrash from Eichah (Lamentations) Rabbah, Pesichta 2.3, on Lam. 1.1:**

" … **אֵיכָה יָשְׁבָה בָדָד, הָעִיר רַבָּתִי עָם** -- Alas , lonely sits the city once great with people!..."**:**

"Rabbi [Yehudah haNasi] sent [R. Chiyya*], R' Asi and R' Ami to go repair the cities of Israel. They would ascend to cities and say, 'Bring us the* נטורי קרתא [guardians of the city]. *The people would produce the

In contrast to this Torah prescribed social system, the form of government that is most widely promoted in the world today is based on structured elections –modeled to a great extent on the system of the United States. In the U.S., the original system of elections was set up at a time when the population of the country was only about 1% of what it is today. It was also at a time that the government budget was less than 2.5% of the total economic activity of the society –~1/10th of fraction that it is now[317]. Further, society was far less complex than it is today: the number of different products available in local stores, for example, was at least two orders of magnitude less then than now[318].

The result is that a system that was set up to function at one scale is now being made to function at a scale that is in many ways orders of magnitude different from what it was designed for. Government in the U.S. appears to have become "a grasshopper the size of a man". That the U.S. and similar societies have not completely collapsed, suffocated and starved is probably more a tribute to the fact that government and society are still far from synonymous. Most of our economic and social activity is still not controlled directly by the results of these structured elections[319].

Much of extra-governmental society actually operates more along the lines suggested by Yithro. The difficulty with this part of society is twofold. First: It reeks of the "collapsed grasshopper" with which it is so closely intertwined.[320] Second: The "G'dolim" -- those who are most esteemed by the general public – usually don't represent Torah values. However, in an environment where most of the collapsed grasshopper is out of the picture, people will be better able to compare Torah G'dolim with the kinds of "G'dolim" that are generally esteemed today in the non-Torah world. Under such conditions, the Torah G'dolim will ultimately come to be seen as good examples for all and the others will be seen more for what they are.[321]

Π This could be a GATEWAY TO BIOPHYSICS, SOCIAL PHYSICS, POLITICAL SCIENCE AND POLITICAL ECONOMY.

ריש מטרתא וסנטרא [captain of the guard and magistrate*.] R' *Asi and R' Ami said, 'Are these the guardians of the city? These are the destroyers of the city!' "The people asked them, 'Then who are the guardians of the city?' "They replied, 'These are the teachers of Torah and Mishnah, who read and teach and guard the Torah day and night, as it is written (Josh. 1:8), 'You shall read it day and night,' and (Ps. 127:1), 'If G-d will not build a house, its builders will have worked for nothing. If G-d will not guard a city, its guard will have been diligent for nothing.'"* Hebr/Aramaic texts at ____ ____ See p.82, note n, crit. text & comment. by Shalom Buber at: _____

*. This is the transl. of Soncino, ed. by Freedman & Simon, which, in turn, follows the classical Hebrew transl: שָׁטַר . 2 Aramaic words are very similar, one used here: סנטרא[also written סנטר] usually translated as *watchman, &:* סנטור - *senator.* This similarity & use of a completely different word for captain of the guards, suggest a double entendre – incl. the idea of senator. In Talmud Yerushalmi, Chagigah, ch.1, halach.7, only סנטורי - *senators* - is used in a similar story adding R. Chiyya.[This wasn't Chiyya ha Gadol.] Transl. based on A Dictionary of Jewish Palestinian Aramaic, 2nd Ed. M. Sokoloff, 02.

317 The US GDP in 1800 ~$519E6. Income =$98/capita and a price deflator for 1996 $ =7.78 [Ca9–19]. Federal & State Gov. revenue were $1.96 & $0.42/capita, respectively.[Ea-A] Almost all Federal expend. in that yr were for Army (23.7%), Navy (32.0%), & interest on public (mostly war) debt (32.0%).[Ea636–643] Historical Statistics of the United States, Millenial Ed. _____

318 US supermarkets carried, on avg. ~40K different products in 2010 & typically had ~46K ft²[Food Marketing Institiute _____ Even though these changes are somewhat offset by advances in transportation, communications and information processing, the same advances have also greatly increased the need for more timely and far reaching decisions. In addition, the number of products on the shelves understates the increase in complexity as each of the products have themselves become orders of magnitude more complex than their colonial analogues. It is only necessary to look at the ingredients on a box of breakfast cereal or the number of distinct devices found in a consumer electronics product. Advances in science and technology have also concealed the inefficiency of government. Where things are improving people will usually not notice how much faster things might be improving, if ….

319 The collapse of the communist system of the Soviet Union and on-going transformation of the People's Republic of China into a more market oriented society, may both be examples of natural – predictable -- responses to governments that had become "grasshoppers the size of a man."

320 For some good examples of the collapsed grasshopper at work in our society see also, in this sefer: **"Justice, Justice…" Public Transportation and the Taliban Π Gateway to Economics, Public Policy & History**

321 For insight into the Torah view of what happens when Torah is allowed to compete with other values in an environment of "Free Speech", see, in this sefer: **The Migdol Bavel, The Seventy Languages and a Possible "Hidden Mitzvah" to Create a "Censorship Resistant" Information Environment. Π Gateway to Languages and "Freedom of Speech".**

LOVE THY NEIGHBOR:

ANTIDOTE TO "THE TRAGEDY OF THE COMMONS"

II GATEWAY TO GLOBAL ECOLOGY

One of the most universally recognized and respected precepts in the whole of the Torah is: "Love thy neighbor as thyself". It's the second part of a sentence in the parsha קְדֹשִׁים, "Holy Ones", in the heart of the five books of Moses:

לֹא-תִקֹּם וְלֹא-תִטֹּר אֶת-בְּנֵי עַמֶּךָ, וְאָהַבְתָּ לְרֵעֲךָ כָּמוֹךָ: אֲנִי, יְהוָה.

Thou shalt not take vengeance, nor bear any grudge against the children of thy people, but thou shalt love thy neighbour as thyself: I am the LORD. **VAYIKRA 19:18**

Rabbi Akiva[322], one of our greatest sages of the post biblical age, said "Love thy neighbor as thyself" is the greatest principle in Torah[323]. Though our meforshim[324] have explored this in great depth, one question that doesn't appear to have been asked is: Why does the Torah use the word רֵעֲךָ here -- and not one of the four other very different words that are used in the Torah to refer to neighbors? :

וּשְׁכֶנוֹ [328], קְרֹבוֹ [327], עֲמִיתֶךָ [326], אָחִיךָ, [325]

What special meanings are embedded in רֵעֲךָ that aren't found in any of these other four words? The four words that aren't used have neighborliness as an idea extended from concepts of kinship, nationality, proximity and dwelling, respectively.[329] The neighborliness of רֵעֲךָ comes from a very different place. The root of the word, רֵעַ, is part of a family of words related to shepherd and pasture: רָעָה [330]. The idea of "neighbor" with this root is 'people who share a common space – as shepherds would typically share a common pasture'. We must care for the pasture as we would want our fellow shepherds to care for it. We shouldn't overgraze it, or dump waste in it -- to make it worse for others – just as we wouldn't want others to make it worse for us.

This also gives a physical focus to the mitzvah and doesn't leave it to individual omphaloskepsis to determine how we should act. It creates an observable social norm – out of which a deeper, personal, human conscious-ness can grow – like the physicality of the Seder and the rules of Shabbes.[331]

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[322] **50-~132 CE. Called "the father of rabbinic Judaism."**

[323] **Sifra, Kidoshim, iv; Midrash Rabbah Bireshis 24:7, R. Akiva , ben 'Azzai & R. Tanchuma discuss which is the greatest principle of Torah . The alternative – argued by ben 'Azzai and R. Tanchuma, is, "This is the book of the generations of Adam" (Gen 5:1) – that as Adam is in the image of God, we may be called on at times to love our neighbor even more than we love ourselves – as we love God more than we love ourselves. A variant Midrash, in Jacob ben Solomon ibn Habib's [1460–1516] sefer Ein Yaakov, offers a 3rd view: R. Shimon ben Pazi [Amora,250-320CE]says** "The one lamb shalt thou offer in the morning, and the other lamb shalt thou offer at even."**(Bam.28:4, read Shach. Rosh Chod., see also:Ex. 29:38 -9)—suggesting ever-present gratitude to & connection with God for daily 'ordinary' miracles of life. It also suggests a need for a regular seder –order- in our lives – not doing things only when you feel like it – & this seder is key to our alignment – our connection- our Dvakus- with Ha-shem. See also COUNT THE STARS & THANKSGIVING AND THE SIX DAYS**

[324] **Hebrew word, meaning: Classical Rabbinical Commentators.**

[325] **In Lev. 19:17, this word , usually translated as "thy brother" is parallel and of similar meaning to: עֲמִיתֶךָ :**

לֹא-תִשְׂנָא אֶת-אָחִיךָ, בִּלְבָבֶךָ; הוֹכֵחַ תּוֹכִיחַ אֶת-עֲמִיתֶךָ, וְלֹא-תִשָּׂא עָלָיו חֵטְא.

"Thou shalt not hate thy brother in thy heart; thou shalt surely rebuke thy neighbor, and not bear sin because of him."

[326] **See above footnote and also Lev. 5:21, Lev. 18:20 , Lev. 24:19 , Lev 25:14-15**

"According to the number of years after the jubilee thou shalt buy of thy neighbor עֲמִיתֶךָ , and according unto the number of years of the crops he shall sell unto thee."

These last two verses - *Lev 25:15 is shown-* distinguish between Jewish and non-Jewish neighbors: land may only be sold in these circumstances to one of your people – not to anyone sharing a common pasture.

[327] **Exod. 32:27** "…Put ye every man his sword upon his thigh, and go to and fro from gate to gate throughout the camp, and slay every man his brother [אֶת-אָחִיו], and every man his companion [**אֶת-** רֵעֵהוּ], and every man his neighbor [**אֶת-קְרֹבוֹ** .]'"

[328] **Exod. 3:22** "but every woman shall ask of her neighbor מִשְׁכֶּנְתָּהּ , and of her that sojourneth in her house, jewels of silver, and jewels of gold, and raiment; and ye shall put them upon your sons, and upon your daughters; …." **Exod. 12:4** "and if the household be too little for a lamb, then shall he and his neighbor וּשְׁכֵנוֹ next unto his house take one according to the number of the souls; according to every man's eating ye shall make your count for the lamb." **These 2 verses show that this word can apply to both non-Jew & Jew**.

[329] **A. Sometimes רֵעֲךָ in our verse is also translated as "your friend". There are two other groups of Hebrew words for friend. a: those based on אהב related to *love* as in "...Abraham , my friend" [Is. 41:8] and, b: those based on חבר related to *associate, bind or pair*, as in "...**knit together as one man" [Jdg 20:11].**

B. Interestingly, the word for *bad* has the same Hebrew spelling as the root of the word for *friend*. The 2 letters ר & ע mean, respectively head & eye – suggesting '*over seeing something'*. For the shepherd –friends, it could mean people who look out for each other's interests. But to non-shepherd planters, shepherds & sheep were 'bad' "...for every shepherd *is* an abomination unto the Egyptians." *Gen 46:34. For a similar type of etymological explanation of the spelling of a group of Hebrew words &Hebrew in General, see also footnotes 14-C & 122-B.8. Also see footnote 675 B on Noach: a bridge between planters, shepherds & hunter-gatherers.*

[330] **R. S. R. Hirsch [1808-88] relates רֵעֲךָ here to pasture & shepherd & explains לְרֵעֲךָ as focusing on things that pertain *to* the neighbor's position in life as opposed to focusing on his personality. David Kimhi [1160–1235] cites meforshim supporting this connection, p356m 'Book of Roots'** (ספר השורשים) _____ **See also: Matit. Clark (2000). *Etymological Dictionary of Biblical Hebrew: Based on …Hirsch.* Feldheim.**

[331] **This idea of physicality was added after talking to ABC 11/26/13.**

Without this clear social value, anything we hold and use in common – like the pastures of our shepherd forbears -- would quickly be ruined as each "neighbor" tries to get the most out of it without considering the wellbeing of others[332].

Today, some our 'pastures' – some of the resources that we use in common – are very small and local – like a table or even a single sefer in the bet midrash. When we take care to return a sefer to its place on the shelf we are observing this mitzvah.

Other 'pastures' extend across the entire world. Great as these resources are in their physical extent and richness, we now know that they're quite finite. The waste products of our homes, our farms, our factories and our cities can't be dumped into the common waterways and spewed into the air without potentially damaging our neighbors – and ultimately ourselves.

It is not only waste that we must be concerned about. The fish in the sea are finite and so are our forests. If each of us tries to take as much as we can without regard for our neighbors – our fellow pasture users – before long, the sea will be depleted of fish and the forest will become a desert [333]. If we use rare types of plants, animals and minerals for food, for fun or even for science and industry, without regard to the replenishment of the things we take -- without regard to the needs of our neighbors in the future – then our own children and grandchildren -- across the world -- will have much less or nothing.

"Love thy neighbor as thyself" has become a mitzvah that shows we are all neighbors. We're neighbors across pastures that now extend from single sforim in our shuls to our city streets[334], to the whole earth. To keep this mitzvah in our day requires that we understand how the systems of our cities and planet work. When issues of urban blight or global climate change are raised -- or depletion of aquifers and petrolfers , or over fishing and desertification -- we must pay attention. We must have our own Talmudei Chachamim – our own sages -- examine these issues and be competent in the relevant fields so that they can see the underlying reality. Only this way can each of us modify our behavior and act with concern for our neighbors -- to truly love our neighbors as ourselves.

Π Gateway to local and global ecology and the history of the competition for resources as part of the origin of war and the making of peace.[335] See also in this sefer: MIDOS ON THE METRO, OR SUBWAY LOVE AND THE EXPANSION OF SPACE-TIME, See also footnote 560-B

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[332] **1.** Examples of our shepherd ancestors being careful in the use of scarce pasture incl. Avroham muzzling his sheep when on other people's territory & Moshe & Dovid going to the wilderness where there were no other shepherds. [see footnote 657 a, c, d] Their care in using common water supplies is shown at Gen 26:15-32; 29:2-10; Ex. 2:15-17. This also a directly supports Hillel's maxim: *"That which is hateful to you, do not do to your fellow. That is the whole Torah; the rest is the explanation; go and learn."*—Talmud, *Shabbat* 31a.

2. This maxim was given in a context that goes from how we should respond to a fool – where the book of Proverbs appears to contradict itself from one verse to the next: ***"Do not answer a fool according to his folly lest you also be like him. Answer a fool according to his folly lest he be wise in his own eyes."*** [Prov. 26:4,5]- to the proverbial patience of Hillel in the face of those apparent fools who would actually or seemingly like to provoke him to anger: "A non-Jew came before Shammai & said to him, 'Make me a proselyte, on condition that you teach me the whole Torah while I stand on one foot.' Thereupon he repulsed him with the builder's cubit which was in his hand." When he went before Hillel, he received the above reply. Both Shammai & Hillel saw the mockery in the question & both probably saw the likely reason for the mockery – ignorance of Torah. Knowing Hillel's proverbial patience & ability to see the Shlemes of situations, Shammai understood that if the question had its roots in such ignorance, the questioner would find his way to Hillel, who'd be best able to answer it in a way that would open the door to Torah. [Thought of after hearing a beautifull drosha [on Lev 19:18 & Hillel's maxim] by R. Yitzchak Breitowitz, [Ohr Someyach, leyl Shabbes Kidoshim, 5778] & said in part to R. Breitowitz & more completely to R. Mordechai Brimm, that night.] **See JUDGING PEOPLE FAVORABLY, part II**

3. For what happens when we abuse common resources, see, Garrett Hardin, 'The Tragedy of the Commons',*Science,*13/12'68:V.162.#3859,p.1243-8

[333] **1.** The impact of non-sustainable timber cutting & grazing in and around forests, can be seen in the desertification of the mountain slopes that were once covered with the rich forests of the Cedars of Lebanon. [See photos of Cedars of God, Lebanon, p 170, surrounded by desert that was once similar forest -- & see footnote 666, there]

2. Among the signs of the coming of the Moshiach are great trees growing in what were once deserts:

"… מִדְבָּר … תִּפְרַח …"*"The... desert...shall...blossom..."* [Is. 35:1];
"אֶתֵּן בַּמִּדְבָּר אֶרֶז…" *"I'll plant in the desert the cedar…"* [Is. 41:19];
"…וַיְשֶׂם מִדְבָּרָהּ כְּעֵדֶן…" *"...[He]...made her desert like Eden…"*[Is. 51:3],

These are also signs that "love thy neighbor…"has been fully realized – not that vast irrigation systems have been built. It's also consistent with the interpretation of : Ps. 81:17 [said in shachris on the 5th day]
and from a rock I will satisfy you with honey וּמִצּוּר דְּבַשׁ אַשְׂבִּיעֶךָּ
"If we go in the ways of God we will receive an abundance of blessing – like honey from a barren land." [מצודת דוד [commentary, 1753]
והוא מדרך משל לומר שהיה רב שפע במקום יובש וצמא אם היו הולכים בדרכי המקום

War is one of the most unsustainable human activities & very destructive of forests.

[334] See next page.

[335] I was focusing on Lev. 19:18 after an event with Pete Seeger. When 91 yr. old Seeger led us in singing: "To everything, turn, turn, turn…"[A] tears were streaming down my cheeks. That night, I found that his birthday, May 3/19, was in Kidoshim, the parsha of the Shabbes 2 days before the concert… containing the famous words, 'Love thy neighbor as thyself…" & then I thought of this chidush.

After hearing a 1 min., oral version of this chidush, R. Hershel Schachter, the leading Posek of YU, called it "beautiful." After reading a version similar to the one shown here (but without the following piece on the pollution of urban soundspace), my rebbe, R. Y.L, addressed me for the first time: "To my "student" & teacher!" [From # 127 – not in notebook.]

[A] A song Pete Seeger wrote in 1954, based on:Eccles. 3:1-8/קֹהֶלֶת ג
'To every thing there is a season, and a time to every purpose under the heaven…' …לַכֹּל זְמָן וְעֵת לְכָל-חֵפֶץ תַּחַת הַשָּׁמָיִם.

CITY SOUND-SPACE: LOCAL PASTURES WITH GLOBAL IMPACTS

Our common pastures today are not only the vast expanses that extend across the globe[336] . The local pastures – the local resources that we hold in common -- are also subject to abuse in new ways that we have been all too slow to recognize[337]. The local air, for example, is not only subject to abuse by filling it with chemical pollutants – with the fumes of cars and the smoke of power plants and factories. It's also subject to abuse by filling it with sound. Today, a single individual – or small group – can fill the air with sound that thousands of people can hear – whether they want to hear the sound or not. With a low cost "boom box" amplifier in their home or mounted in a "boom car"[338], sound – music, speeches -- even sermons – can be forced into people's homes and consciousness.

The impact of this abuse of our common and very limited sound-space is far reaching. In the short run, we close our windows and turn on the air conditioner – increasing our consumption of energy and putting more pressure on our global resources.

In the long run, we make more space between ourselves and our neighbors. We live much further apart both geographically and culturally – preferring the wider spaces of the suburbs to the more compact, more sound polluted streets of our cities. These suburbs are much less efficient in energy and mineral use than a dense apartment system with equivalent domestic living space. They require cars and buses to get around – where the same trips in a more compact city would be made conveniently on foot.

Sound pollution – particularly when it is the result of individual action – like boom cars - also creates unnecessary tension between people. This tension works its way into the fabric of day-to-day life. It ultimately finds expression in increased violence and crime [339] – making cities that much less attractive and giving those with a choice even more impetus to flee to the suburbs. Those with the choice are often the ones who are making more money – professionals of every kind who might ordinarily become part of the natural leadership of a community.

Sound pollution also makes studying more difficult – driving the more studious – or those who care more for their children's education – out of the urban community and into the suburbs. With the more capable and more studious people driven out, a social vacuum is created that draws a new kind of leadership to the fore: gangsters. Gangsters, in turn, drive out those who are concerned with their physical safety – at least those who have the resources to leave.

Those who stay - including many of the gangsters - often keep large dogs to protect their homes – adding to the blight on the sidewalks where their dogs are allowed to defecate. Big dogs also add to the level of tension and menace and increase demand for food and living space. Many people take cabs instead of walking, just to get around more safely – further adding to pollution.

The abuse of our common sound space – part of the local pasture of our cities –makes urban life decay in a vicious circle while suburbs become more and more attractive. Local and global resources are wasted on a massive scale.

With all this, the "boom box" pollution of our common urban sound space has been neglected by the usual environmental organizations -- the kind that have focused on the physical poisoning of our air and water. They may see this as a purely local – neighborhood – issue and fail to recognize how these local abuses of "love thy neighbor" have repercussions that extend in so many ways across our vast – but still neighborly – world.

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[336] Based on the use of the word רֵעֶךָ -- related to pasture -- in the expression "Love thy neighbor as thyself."[Lev 19:18] For details, see, in this sefer: **LOVE THY NEIGHBOR: ANTIDOTE TO "THE TRAGEDY OF THE COMMONS,"**

[337] See, in this sefer: **MIDOS ON THE METRO** and **RIGHTEOUS PRICES IN THE WILDERNESS AND CITY**

[338] For an account of the author's experience trying to quiet four "boom cars" see **footnote 97, p 37**

[339] See in this sefer: **THE FOUNDATIONS OF THE WORLD**

FROM THE COPPER SNAKE TO THE TREE OF LIFE

II Gateway to Archeology, Prehistory and Surface Physics.

There are three words in Chumash – in the five books of Moses - that appear at first glance to have no relationship to each other -- other than their sound and spelling. These are, in order of their appearance: נָחָשׁ, snake [340]; נְחֹשֶׁת, copper[341]; and נִחַשְׁתִּי, divination [342].

In several places, however, the words are linked together by their context. The most well known example is: נָחַשׁ נְחֹשֶׁת, the copper snake [343], fashioned by Moshe. This not only links copper and snake but the function of this copper snake was connected with the Divine power to heal. More than six centuries later, in the days of מֶלֶךְ חִזְקִיָּהוּ, King Hezekiah, this copper snake had become an object of idol worship. It was called נְחֻשְׁתָּן –Nichoshtan- and was broken in pieces by the King in his effort to remove all idol worship from the land of Israel.[344]

The most concentrated use of any of our three words is in the book of Exodus in the construction of הַמִּשְׁכָּן – The Tabernacle -- in the desert.

Here נְחֹשֶׁת -- copper – is mentioned over thirty times. Within the Mishkan the most concentrated use by far is in the main altar. All of the visible parts of this altar were made of solid copper or of wood over-laid with copper.[345] All of its utensils – maybe even the knives – were made of copper[346]. Wherever we looked in connection with that altar, we'd see copper. It was even called the copper altar.[347] It could have been made of gold – like the table for the show bread, the candelabra, the altar for the incense, the כְּרֻבִים - Ch'ruvim- and the cover of the holy ark.[348]

Whenever a person who lives and thinks in לשון הקודש – the Holy Tongue - Hebrew - saw the Altar of נְחֹשֶׁת, copper, they'd think of other words with the same sound – like נָחָשׁ, serpent. They'd realize, if only subconsciously,

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[340] וְהַנָּחָשׁ, הָיָה עָרוּם, מִכֹּל חַיַּת הַשָּׂדֶה, אֲשֶׁר עָשָׂה יְהוָה אֱלֹהִים...

"Now the serpent was more subtle than any beast of the field which the LORD God had made…" **Genesis 3:1**

[341] וְצִלָּה גַם-הִוא, יָלְדָה אֶת-תּוּבַל קַיִן--לֹטֵשׁ, כָּל-חֹרֵשׁ נְחֹשֶׁת וּבַרְזֶל

"And Zillah, she also bore Tubal-Cain, the forger of every cutting instrument of copper and iron**…" Genesis 4:22**

The word I translated 'copper' is usually rendered 'brass' – but it's identical with words that in other places are clearly copper. For example:

וּמֵהָרָרֶיהָ תַּחְצֹב נְחֹשֶׁת. . . . "…and out of whose hills thou mayest dig copper." **DEUT. 8:9**

Native copper – pure copper- may be dug out of hills. Brass is an alloy of copper & zinc -- not dug out of hills.

[342] **Actually, "I devined…"** וַיֹּאמֶר אֵלָיו לָבָן, אִם-נָא מָצָאתִי חֵן בְּעֵינֶיךָ; נִחַשְׁתִּי, וַיְבָרְכֵנִי יְהוָה בִּגְלָלֶךָ.

And Laban said unto him: 'If now I have found favor in thine eyes--I devined that the LORD hath blessed me for thy sake.' **GENESIS 30:27**

[343] וַיַּעַשׂ מֹשֶׁה נְחַשׁ נְחֹשֶׁת, וַיְשִׂמֵהוּ עַל-הַנֵּס; וְהָיָה, אִם-נָשַׁךְ הַנָּחָשׁ אֶת-אִישׁ--וְהִבִּיט אֶל-נְחַשׁ הַנְּחֹשֶׁת, וָחָי

And Moses made a serpent of brass, and set it upon the pole; and it came to pass, that if a serpent had bitten any man, when he looked unto the serpent of brass, he lived. **NUMBERS 21:9**

[344] **2 Kings 18:4**

[345] **Exodus 27:1-27**

[346] וַיַּעַשׂ אֶת-כָּל-כְּלֵי הַמִּזְבֵּחַ אֶת-הַסִּירֹת וְאֶת-הַיָּעִים וְאֶת-הַמִּזְרָקֹת אֶת-הַמִּזְלָגֹת וְאֶת-הַמַּחְתֹּת כָּל-כֵּלָיו עָשָׂה נְחֹשֶׁת.

And he made all the utensils of the altar, the pots, and the shovels, and the basins, the flesh-hooks, and the fire-pans; all the utensils thereof made he of copper. **EXODUS 38:3**

After specifying the Cu altar's utensils– with no mention of knives- the seemingly unnecessary words "all the utensils thereof" are added, suggesting that utensils not separately mentioned but integral to Altar's function– perhaps including the knives – were also Cu. For regular offerings, like the Tamid תָּמִיד [Ex29:38-9] there were rooms in the Temple called חלִיפות [Yoma 36a], for storage of Priests knives. Cu knives would probably have to be sharpened & checked before each use. No Fe found in mishkan. At Zevachim 88a, the knives are regarded as Klei Kadosh – not the personal property of the Kohanim & "Abba Shaul says: 'There was a knife that had a tendency to produce treifos & the Koanim decied against using it & they stowed it away." [Comment says it had tendency to become nicked. [Was it Cu? ASA]]

[347] **Exodus 39:39** ...**אֶת מִזְבַּח הַנְּחֹשֶׁת**

[348] **The total amounts of metals used in the tabernacle - Au, Ag & Cu- are given in EX 38:19-31. It comes to 29.24 talents of Au, 100.59 of Ag & 70.80 of Cu. Most Cu was probably used for the 60 sockets & pins that supported the surrounding curtain-wall & entrance way. Some was used for laver. Most Au went into tefach thick (~8-10 cm) Au plate covering ark that held the sapphire stone tablets.[Rev.: Cover was Au on wood; Tablets: lapis lazuli. ASA 12/'22]**

[349] **A.Similarly, פָּרָה אֲדֻמָּה – red heifer [Num. 19:2] comes to atone for our פֶּרַע 'breaking loose'/sins [Ex:32:25] with the עֵגֶל מַסֵּכָה molten calf [Ex. 32:1-24].Calf was made from gold-not pure gold-Ex. 32:3- earrings of men– not women [Perkei d'Rabbi Eliezer (p.354 transl /annot: G. Friedlander, 1916- says it was made from piece inscr. with God's name & a picture of a calf. _____ Midrash Tanchumah-Yelammedenu has nothing about calf picture. It has the women refusing – due to their greater attachment to God S. A. Berman 1996, Engl. Trans. Ch 8:19 p 598-9.] It's only called molten [not golden] calf –suggesting its color wasn't gold.**

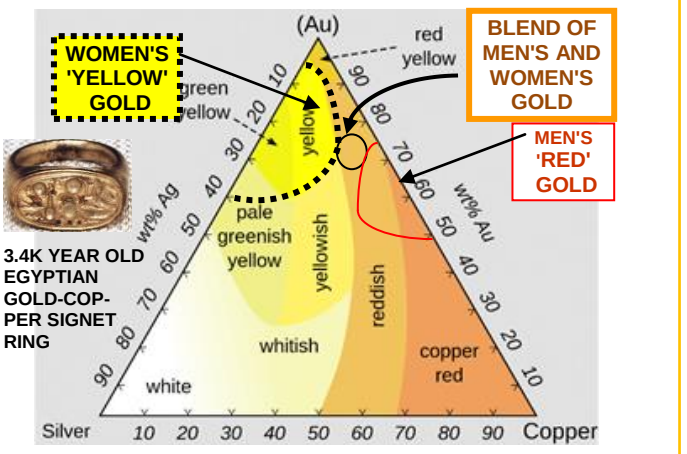
B.Rashi on פָּרָה אֲדֻמָּה Num 19:22*"This can be compared to a maidservant's son who soiled the Kings palace. They said, 'Let his mother come & clean up the mess.' Similarly, let the cow come & atone for the calf."* So, we'd think 'mother' is ~same color as 'son'. So, molten calf may've been reddish-gold like a reddish cow - like ~14-18ct Au–Cu alloy [next p. below, right]. This alloy would also be better for men's earrings: 30wt% Cu is far more robust & closer to men's more 'out of tent' suntanned color. [Rivka goes out toward evening; Leah & Dina 'going out'[Gen 24:11, 30:16,34:1]]. If, as a Mir student suggested [Vayishlach,5777,Ohr Someyach], men took gold from women by force, mixture still reddish. Color helped tell men's earrings from women's.[Dt.22:5] Temple Institute in Jerusalem, at section on the red heifer has 1."Why must the heifer be red? To rectify the infamous idol which shone with a reddish hue" & 2. "Moses said to Korech, "The red heifer will atone for their gold which is red.""[cont.next p]_____

that this altar of נְחֹשֶׁת - was to be used to atone for our sins with the נָּחָשׁ.[349] [Note starts at A on prev. page.]

The same associations would run the other way as well. Whenever a person who lives and thinks in Hebrew would hear the story of the נָּחָשׁ -- the snake -- in the Garden of Eden, they would also think of נְחֹשֶׁת -- copper.

But how did these words come to be associated in the first place – and how do they both relate to the third word: נַחַשׁ - divination? The wonder and mystery of copper and the origin of its name might have come when it was first deliberately melted from rocks that didn't look like copper at all. This process required fires more than 1,000°F hotter than the normal fires of cooking and hundreds of degrees hotter than the kilns for ancient pottery. These super-hot fires – by the standards of the time – would produce liquid copper – glowing greenish –orange- yellow from its own heat.

Possible colors of Men's 'Red' Gold & Women's 'Yellow' Gold alloy earrings that would be mixed to make the molten calf & produce the color of the RED HEIFER פָּרָה אֲדֻמָּה



TERNARY PLOT of approx. colors of Ag–Au–Cu alloys, commonly used in jewelery making. 14/8/09 see also: **A.** "The Colour Of Gold-Silver-Copper Alloys" Randall. M. German, et al, [Gold Bulletin,9/'80,v.13,#3,p.113-16] shows a 7% greenish tinge @ ~58at.% Au, or ~73wt.% Au., rest=Ag **B.** "On The Hot Pressing Of Coloured High-Gold Alloys Powder Compacts...[For] Jewellery...", Bruno Henriques, Et Al., Gold Bulletin '13),v.46,p.117–25. Green gold used weekdays is contrasted with [much stronger, lighter] red gold used Yom Kippur Mishna, Yoma 43b [also found in the Talmud Yerushalmi,Yoma 29a] בכל יום היתה זהבה ירוק והיום אדום. This is a source of idea that ירוק sometimes means yellow. The CIE chromaticity coordinates of 'green-yellow' gold'-'0N' & 'red gold' - '5N', are: x=0.3383, y=0.3662 & x=0.3591,y=0.3604 respectively –not far apart as far as appearance goes. This is for Au-Ag-Cu alloys in ISO standards. SEE "The Colors of Gold Alloys" Pro-Gold SRL & "Coloured Gold Alloys" *C. Cretu & E. Van Der Lingen, Gold Bulletin 1999, 32(4) 70-73% AuAg*=Green Au Australian Sovereign in 1890

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[349] [cont from prev. p.] 1. supra, is sourced to 'Rashi quoting the *midrash* of Rabbi Moshe Hadarshan' in 'The Perfect Mother Cow *Parashat Chukat*.' by Rebitzen Chana Bracha Siegelbaum 6/23/15. Email sent to: Hananel.Mack@biu.ac.il, expert on R. Moshe Hadarshon, & Temple Inst. אבי כהנא kahanavi@gmail.com, Dec/7/17

C.Ref. to this molten calf, in addition to Ex32:4&:8, in the 1st account, incl: Dev.9:16, Neh.9:18 & Ps106:19. Ref. to golden calves in Tenach are King Jeroboam's idols 500+ yrs after Ex [1 Kings12:28, 'שְׁנֵי עֶגְלֵי זָהָב- 2 gold calves' 2Chr.13:8]& maintained by Jehu [2Kings10:29 ' עֶגְלֵי הַזָּהָב – golden calves']. These were also called molten [2Kings 17:16 &, maybe, Hos.13:2]. The king could use best gold. So, the color of the Para Aduma – red heifer -reminds us the sin of the molten calf חטא העגל was out of confusion & forgivable. חטא is seen here as unintentional. Jeroboam's sins, also called חטא, were planned & much worse.e.g. 1K13:34

D.[This part, on color reminding us of relative severity of two gold calf episodes was thought of & said in Yiddish, Shab Chukas, 5775 at Shev. Brochos of Dovid Zelig Tseinert & Chava[Slonim]– grand-daughter of R. Yisroel Dov[Beryl]Biderman.] When K.G. takes red-gold shovel into K.K. in darkness on Y.K. [Lev.16:12]he's tacitly drawing Hashem's attention to this distinction: incident with molten calf was more בשוגג - b'shogeig – unintentional, than במזיד - b'maizid – deliberate. [Thought of after R. Y. Breitowitz's talk on Avoda of KG on Y.K.—[Ohr Somayach, motsei Shab. Tshuva, bef. Y.K., 5776.] [Rosh HaSh. 26a "Why does not the High Priest enter the inner precincts in garments of gold to perform the service there? [שאין קטיגור נעשה סניגור] Because the accuser may not act as defender…But what of the spoon…[& shovel]? What we say is that the sinner should not adorn himself." So shovel & spoon are linked & similar: weigh less & 'remind' HaShem chet haEigle was ~b'shogeig; & makes a matched set. [Also similar in size: Shovel holds 3 kab of coals [Yoma 43b], spoon≤4 kab of incense – for giant KG Yishmael ben Kimchis [Yoma 47a]1kab≥1 liter; for avg. KG< 2 liters]Thought of after reading Mishna Yoma, Maariv, Yom K., 5778, Brisk, Press St., Jer.] If shovel is 20×30×5cm, capacity~3 liters; If metal ~.3cm thick, [20×30]+[[30×2+20]×5]=600+400=1000cm^2;×.3cm=.3liters; handle is~4cm^2×50cm long =.2 liters;.3+.2=.5; .5×13.4g/cm^3=6.7kg RG; 8.0kg GG [Densities from E, below] But stronger RG can be thinner than GG & weight saving >1.7kg.

E. Vessel [מזרק] with bull's/goats blood also taken into K.K. on Y. K. is Au. Dam ha nefesh kli [~rounded cone ~34cm ht.×~27cm widest outer diam; ≥1cm wall]; V. of cone =1/3 b×h; inner vol.=1/3×[π×[12.5^2]×[34-[34/13.5]=1/3×[π×156.25×31.48]=5.15 lit; But, vessel shown is bulging, rounded cone, filled to ~3.5cm from brim. Assume ~5lit. blood; Empty vessel .5×26×π×[34-1.25]×1.0=1.34 lit.;If red gold [65wt%Au:Cu=16ct=13.4gm/ cm^3] =18kg; Greenest gold ~73%Au:Ag ~16g/cm^3 ~21.4kg.=3.4kg heavier; RG would be thinner & save more [dimensions from drawing, next p., from: אליעזר מרדכי בן-שם: אחת בשנה: סדר עבודת הכהן הגדול ביום הכיפורים] colorized by ASA. Gm/cm^3 from ref A in diagram at right & 'The Density of Gold-Silver-Copper Alloys…"'C. *Kraut & W.B.Stern, Gold Bulletin* 2000,33(2). So RG like shovel & spoon.

F. The bull was a par פַּר=yearling+[Lev16:11 Weight in 2nd Temple times, maybe like Ethiopian unimproved native Boran cattle used for milk, meat & work, fed mostly on natural pasture, had bull wts= ratio of Holetta[mosly pasture fed] to total [incl. mostly stall fed]×male wt×ratio [pure Boran/total]e.g. [125.6/137.9*141.6=129.0]×[111.2/137.9]= 104kg,at 1yr; table 2, 'Ethiopian Boran cattle…in central Ethiopia', A. Haile,__] et al, J. Animal Breeding Genet. V.128 '11,p.133–40]US bulls bred for meat.: Angus; or milk & meat: Friesian, were 430+kg at 1 yr in USA in 1998-99:Table 3& Fig. 1, "Growth…of F1 bulls from...Angus…Friesian…sires" E. Casas, et al, J. Anim. Sci. '07. 85:2904–29; "Parameters of Growth of Holstein-Friesian Bulls", L. L. Calo, et al.,p.417-22, J. Animal Sci.,v.37,#2,'73, p.419 gives wts in 1970's, 50's, &' 30's for age up to 8 yrs;"[unimproved,~pasture fed, Holetta] [g]oats in Ethiopia…[~]yearling age… [are]15 to 20 kg." p.2, National Goat Research Strategy In Ethiopia, A. Tsegahun, et al, Proc. Conf. Debub U., Awassa, Eth. 11/'00. p. 1-5. ["A chatas goat whose 1st yr has past is disqualified." Yoma 65b Schotten., note 11, citing Rashi; & Soncino,note 6]Tho pasture fed calves had lower weights, fatted calves were well known, e.g.: 'Better is a dinner of herbs with love *than a fatted young bull* [מִשּׁוֹר אָבוּס] and hatred with it.' Prov.15:17

G. Mean cardiac output 40 lt/min., .56 l/stroke; 12 sec. circulation time; Table 3, p 10, "Observations on the Circulation of Domestic Cattle"J.T.Doyle,M.D, et al, *p.4-15, Circulation Res., v. VIII, Jan. 1960, avg wt =406kg, age not specified* "The circulating blood volume in animals…[≈]8% of body weight…[&~]18% of total volume flows through the brain at any one time."pdf p 52; The EFSA Jnl ('04),45,[270pages], "Welfare aspects of the main systems of stunning and killing the main commercial species of animals"."Levinger [I.M.'95. Shechita in the light of the year 2000. *Critical view of the Scientific Aspects of Methods of Slaughter and Shechita*]…[writes] the heart continues to pump blood… [>1 min.]after…[schitah], towards the opening of the carotids…" pdf p 90 "Influence of conventional and Kosher slaughter techniques…" Babatunde Agbeniga, 2011; "A comparison of blood loss during the Halal slaughter of lambs following Traditional Religious Slaughter…" Rizvan Khalid ___ et al, Meat Science 110 (2015) 15–23. With lambs avg. 38kg, .42kg blood came out by 10 sec; 1.1kg:60 sec;1.36: 90sec; 1.43:120 sec.[Fig.2] If this proportion held for 400 kg bulls, ~11kg of blood would come out in 1 min – like בן-שם [supra D.] at p258, note 1, ~"'*dam ha nefesh*' today is 10 liters or more" [trans from Heb. By ASA. So, vessel as drawn is consistent with bull ≤200kg & Goat was probably closer to 50 kg. Since the par was the KG's personal animal, he had an interest in & was in a position to select a smaller one to lighten his burdens on YK.

H.'… by the mid-third millenium BC copper was sometimes added to both gold and sliver… addition of copper to gold reddens it and some… signet rings of the late [18th] Dynasty contain 50% or more copper, which gave them [a]… reddish color.' p.30 Ancient Jewellery, [Dr] Jack Ogden, [Gemmological Assoc. of G. B.] U. of Cal. Press, Brit. Mus'm, 1992 [Fig. above right: "gold …signet ring…cast all in one by the lost wax…method…with the…name [of]…pharaoh Akhenaten". [ruled ~3.4k yrs ago] British Museum # EA37644]

GOLDEN VESSEL

HOLDING ABOUT 5 LITERS OF *DAM HA NEFESH* FROM COHEN GADOL'S BULL ON YOM KIPPUR – HELD & STIRRED BY AN ASSISTANT COHEN

[SEE FOOTNOTE 349 E FOR DISCUSSION AND SOURCE; COLORIZED BY ASA]

When this bright glowing liquid copper was poured on the ground – in a way that it could run like a rivulet – it would do something that no other material could do: It would form itself into what looked like a real, life-size, wriggling snake – with a coloration similar to some of the most dangerous snakes of Israel.

It's extremely high surface tension -- ~18X higher than water -- would make it stand up on the surface – even more than drops of mercury stand up where water drops spread out[350]. At the same time, it would flow like water. On exposure to air, the surface of this brightly glowing, liquid, snaking copper would begin to transform. It would oxidize and change color to darker and redder hues against the glowing pale green-yellow-orange background. The more oxidized parts of the surface would lose close to half of their surface tension[351]. This would cause slow flow on the "skin" of the snake -- even as the whole snake rippled and wriggled under general surface tension and even as it continued to change color[352].

Then it would begin to freeze. The tail would freeze first – thinned out as fluid ran into the body[353]. Then the surface of the "head" of the snake would freeze. It would be rounded in front like a snake's head by the high surface tension and continued flow of fluid from the body. At the same time, it would be flatter than the rest of the body as a result of more time for surface oxidization and relative loss of surface tension. When the front surface of the head freezes on its surface and stops moving, the very fluid molten copper within could break through even tiny cracks and holes that might form from surface contractions of the most exposed "mouth" end of the snake. Out would come thin glowing snake's tongues of liquid copper. With a very high surface to volume ratio and high surface air speed, these thin liquid wire tongues might freeze and stiffen in mid air.

While this was going on, the molten copper snake would be turning any residual water present in or on the surface to steam – breathing, hissing and "talking" as it went[354]. The body and skin would continue to move even as the head froze – and stuck out its tongue. When the body began to solidify, it might make additional noises and movements resulting from the uneven contraction of the cooling metal. When it was finally cooled and "dead", its surface – covered by a thin patterned oxide layer of pink and gray and tan on a copper background -- would resemble, as already noted, some of the common

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[350] The height, *h,* of a puddle or drop of a given liquid/surface interface, is given by $h = ((2\gamma_{la}\,(1-\cos\theta)) / g\rho)^{½}$. For mercury on glass, *the surface tension*, γ_{la}Hg =487 dyne/cm*; the density,* ρHg= 13.5 g/cm^3, and θ = 140 °, which gives h_{Hg}=0.36 cm. For liquid copper, surface tension and density are ~1300 dyne/cm and 8.0 g/cm^3 respectively. If, as shown by *Kuz'min*, infra, liquid copper has a contact angle on quartzite of ≥140°, $h \geq (1300/487 \times 13.5/8.0)^{½} \times 0.36 = 0.76$cm before oxidation. After oxidation, it would widen and flatten, with *h* closer to 0.6cm, similar to the head of a small, saw-scaled viper – one of the most dangerous snakes in Israel (*Babocsay*, infra, note 186) Also, liquid copper wets porous refractories even less than non-porous, but cuprous oxide wets both. "The Wetting of Refractory Products by Copper and Cuprous Oxides" L. I. Kuz'min, p763-8, V. 14, #11-12 / Nov.,'73,Refractories and Industrial Ceramics. _____

[351] "Effect of Oxygen on the Surface Tension of Liquid Copper." B. Gallois and C.H.P. Lupis. V. 12B Metallurgical Transactions B, Sept 1981, p 549-57 _____ "Measurement of surface tension of molten copper using the free-fall oscillating drop method." Taihei Matsumoto, Hidetoshi Fujii, Takaharu Ueda,Masayoshi Kamai & Kiyoshi Nogi, Meas. Sci. Technol. 16 ('05) 432–7

[352] Copper(I)oxide (cuprous oxide)--Cu_2O and Copper(II)oxide--CuO, are red and black, melt at 1235 & 1201°C, respectively and are both about ¾ of the density of molten copper.

[353] High surface/volume ratio would speed freezing but the Plateau–Rayleigh instability might break the rivulet's tail into drops before the tail skin froze. See: _____ & "Meandering Instability of a Rivulet" *Ho-Young Kim, Jin-Ho Kim & Byung Ha Kang,* J. Fluid Mech. ('04), v 498, pp. 245–256. _____The reduction in surface tension with oxidation – discussed above – would slow the process of "snake" breakup.

[354] The water steaming out from under the snake would include water of hydration that is chemically bound in many minerals and would be released at the temperatures of molten copper.

ECHIS COLORATUS TERRAESANCTAE
GET PERMISSION

poisonous snakes of Israel[355]. This skin could be shed – also like a snake.[356]

This transformation from rocky copper ores, to liquid metallic copper, to a moving, glowing, colored, hissing snake, to a copper model of a snake, would be among the rarest and most unexpected "man made" events that one could witness in the ancient world. It would combine many polar opposites: light and dark., earth and fire, solid and liquid, sound and silence and the appearance of life and death. Yet it would yield a systematic range of seemingly random variations –a key ingredient of all forms of "tea leaf reading" – divination. It would also be something that human beings – those with the necessary rare and special knowledge -- could repeatedly produce and control. It would be a byword for mystery and if there was not yet a word for mystery or divination, these truly wonderful sights would make the words for snake and copper excellent candidates.

So what can we learn from these connections about the story of the snake in The Garden or about the copper altar that we made – at the instruction of God – to atone for our sins? Perhaps the story of the talking snake and the tree of knowledge of good and evil includes an allusion to the advance of knowledge of the Copper Age.

It was only seven generations after Adam and Chava that we have Tuval-Cain:

לֹטֵשׁ כָּל-חֹרֵשׁ נְחֹשֶׁת וּבַרְזֶל...

"…sharpener/forger of every cutting instrument of copper and iron"[357] [GENESIS 4:22]

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355 E.g, the saw-scaled vipers of Israel, *Echis coloratus terraesanctae and Echis coloratus coloratus*: "Geographic variation in *Echis coloratus* ...in the Levant...", G. Babocsay, Zoology in the Middle East, V. 29, '03: 13-32. Small, moderately stout, pale sand viper, adults ~30-60 cm long, yellowish-gray, light brownish-gray, or pale blue-gray, w/gray to tan, bright reddish or pinkish, dark-edged dorsal blotches. Can exist in extreme desert conditions. Important cause of fatalities in Israel.

356 With all of this, it should be clear that, as of this writing, 7 Av, 5770, the author hasn't observed or learned of any demonstration of such a snakelike phenomenon in liquid-solidifying copper. An experiment or good computer simulation is needed. Forming the rivulet on a bed of powdered charcoal might prevent oxidation by smothering the snake in CO & CO_2. A simple molded copper snake would also resemble a real snake more than one of gold or silver.

"According to Dr. Ben-Yosef, the smelters [of copper three millennia ago at the Timna mining site in Israel's Negev Desert] needed to be well-versed in the sophisticated technology required to turn stone into usable copper. This knowledge was so advanced for the time it may have been considered magical or supernatural." [Emphasis added] from: 'Ancient Metal Workers Were Not Slaves But Highly Regarded Craftsmen' *Aug. 28/14*, citing: Lidar Sapir-Hen & Erez Ben-Yosef, 'The socioeconomic status of Iron Age metalworkers: animal economy in the 'Slaves' Hill', Timna, Israel', Antiquity V. 88 '14:#341, p. 775–90 _____ citing: 'The Faerie Smith Meets the Bronze Industry: Magic Versus Science in the Interpretation of Prehistoric Metal-Making.' P. Budd & T. Taylor, World Archaeology, V.27, #1, 'Symbolic Aspects of Early Techn'. 6/95, p. 133-43

357 **A.** Copper is mentioned first here: Cu utensils were made before iron. It should also be clear that Tuval-Cain was not the father of all copper utensils. From the word כָּל "every", we learn that he made every type of cutting instrument, but before him, some made a more limited range of cutting instruments and other copper utensils.

B. Copper, unlike iron -- but like its fellow noble metals, silver and gold -- is found in its native state – often as 99% pure copper nuggets. These can be hammered into a variety of useful tools. They can be made – without melting -- into cutting instruments that would be much more effective – harder, stiffer and more able to retain a sharp edge -- than the same instruments made of silver or gold. In the Great Lakes region of North America, substantial amounts of 99% pure native copper were found. Beginning over 5,000 years ago, it was hammered to produce spear points, tools and decorative objects. As of '90, the earliest crucible furnace for copper was found near Beersheba in Israel from ~5,000 years ago. [From: An Encyclopedia of the History of Technology, by Ian McNeil, 1990, p. 50]see also _____

C. Iron is found as a metal in nature in iron-nickel meteorites – never as pure iron. Ordinarily, it isn't something that can be reliably mined, so it was difficult to build up a technological base for processing it. Still, the 50 tons of the Cape York Meteorite Group in Greenland were mined by the Inuit for over a thousand years. Though meteoric iron can be made into very useful tools, it's much harder to work than copper, silver & gold. Production of non-meteoritic molten iron would have to await manmade fires 800°F hotter than those necessary to melt copper. [See table of properties of metals, gems & other special mater'ls in "Sapphire Torah" in this

Once Adam discovered how to make copper from rocks through intense fire, it was only a matter of time before he would learn how to master iron. Iron would become the material of war – the material of the sword: חֶרֶב which comes from the root: חרב - destruction, dried up or laid waste. The Garden story ends with:

וַיְגָרֶשׁ, אֶת-הָאָדָם; וַיַּשְׁכֵּן מִקֶּדֶם לְגַן-עֵדֶן אֶת-הַכְּרֻבִים,
וְאֵת לַהַט הַחֶרֶב הַמִּתְהַפֶּכֶת, לִשְׁמֹר, אֶת-דֶּרֶךְ עֵץ הַחַיִּים.

So He drove out the man; and He **stationed at the east** of the Garden of Eden the cherubim, and the **flaming** sword which turned every way, to keep the way to the tree of life. **[GENESIS 3:1-24, 24]**

It suggests that it is only when we master that ever-turning -- ever changing -- flaming sword -- the symbol of the potential destructiveness of the ever changing לַהַט – fire magic[358] -- of science and technology – that we will be able to return on the path to the Tree of Life. The Mishkan – the Tabernacle – the Garden of God in our Midst -- is the center of that path. Iron, the symbol of war, has been excluded[359]. The science and technology -- the mystery -- of copper -- through the copper altar – is now "stationed at the east" of the Garden of God -- and has been brought to serve repentance. כְּרֻבִים -- Cheruvim, now guard the way to, the אשדת -- Fiery Law[360], The Torah, The Tree of Life for Adam with Knowledge:

עֵץ-חַיִּים הִיא, לַמַּחֲזִיקִים בָּהּ; וְתֹמְכֶיהָ מְאֻשָּׁר.

It is a tree of life to them that grasp her, and happy are those that hold her fast. **[PROV. 3:18]**

Π This could be a Π Gateway to Archeology and Prehistory– the stone age, copper-age, etc. – including the history of the control of fire, water and wind power.See, for example: Dawn Of the Metal Age: Technology and Society During The Levantine Chalcolithic. Jonathan M. Golden. 252 Pages. Equinox Pub. 2010. Also, a Gateway To Surface Physics. See also in this sefer: Sapphire Torah: Π Gateway to Chemistry, Geochemistry and Materials Science; Rings of Gold Π Gateway to Metallurgy and Practical Mechanics; The Keshes B'Anon – the Rainbow in the Clouds Π Gateway to Physics & the Edge of Unknowing How Did The Generation of the Mabul (the Flood) Get So Bad? & How Did the People of S'dom Get So Bad So Quickly?

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sefer. See also in this sefer, KAMIL CRATER & associated 5-10 ton iron-nickle meteorite – photo p. 179. The Inuit people who worked the NW Greenland, Cape York meteoritic iron, also worked the extremely rare, terrestrial/telluric nickel-iron grains found in volcanic basalt at Disco Bay, Greenland, 500km SSE [by boat] of Cape York. They were able to extract ea size grains from the basalt & work them into small flat coin size pieces that could be used in combination to make a type of saw-knife, p. 21 Meteoritic iron, telluric [terrestrial] iron and wrought iron in Greenland. Buchwald, V.F., Mosdal, G. *Meddelelser om Gronland, Man & Society;* Vol.9 1985]

D. The Egyptians were aware that iron meteorites originated from the sky & had a term "iron from the sky". The exquisitely fashioned blade of a ceremonial knife buried with "King Tut" – ~3400 yrs ago was made of meteoric iron. "The meteoritic origin of Tutankhamun's iron dagger blade", Daniela COMELLI, et al.,__ Meteoritics & Planetary Science 51, Nr 7, 1301–1309 (2016) _____

[358] **A.** The meforshim say, among other things, לַהַט was a kind of 'fire magic'. They link this to where Egyptian magicians – with their 'secret arts' בְּלַהֲטֵיהֶם --were able to turn something that looked like a staff into something that looked like a snake. [Ex 7:8-12, 7:11] [Related to לָט ?Ex7:22, blood; 8:7, frog; 8:18, lice.]Ramban, for example, refers to Sanhed. 67a, Ps. 104.4 & 106.18. The latter 2 places show : אֵשׁ לֹהֵט , "flaming fire" and לֶהָבָה, תְּלַהֵט רְשָׁעִים. , "the flame burned up the wicked."

B. A copper sword at the temperature of forging and workability – near 1000° C – would appear fiery – particularly when viewed at night.

[359] **A.** While the Mishkan -- the portable tabernacle that served the Jewish People for over 400 yrs – contained no iron at all, the temple of Solomon apparently did.

וַיִּתְּנוּ לַעֲבוֹדַת בֵּית-הָאֱלֹהִים, זָהָב כִּכָּרִים חֲמֵשֶׁת-אֲלָפִים
וַאֲדַרְכֹנִים רִבּוֹ, וְכֶסֶף כִּכָּרִים עֲשֶׂרֶת אֲלָפִים, וּנְחֹשֶׁת רִבּוֹ וּשְׁמוֹנַת
אֲלָפִים כִּכָּרִים; וּבַרְזֶל, מֵאָה-אֶלֶף כִּכָּרִים.

"And they gave for the service of the house of God of gold five thousand talents and ten thousand darics, and of silver ten thousand talents, and of brass eighteen thousand talents, and of iron a hundred thousand talents." **[I CHRON 29:7]**

B. Chazal disagree about the size & design of the Cu altar & height of the courtyard curtain wall. See footnote 215 B,C,D.

There's a further controversy on the meaning of:

וְעָשִׂיתָ לּוֹ מִכְבָּר מַעֲשֵׂה רֶשֶׁת נְחֹשֶׁת וְעָשִׂיתָ עַל-הָרֶשֶׁת אַרְבַּע
טַבָּעֹת נְחֹשֶׁת עַל אַרְבַּע קְצוֹתָיו:

"And you shall make for it a copper grating of netting work, and you shall make on the netting four copper rings on its four ends." SH: 27:4, [& 35:16;38:4,5,30;39:23]

This may refer to grillwork in altar's walls that admitted air to filling of rocks & sand –to keep filling dry & feed the fire with a stream of air from below. This would make the fire go up straighter. This also suggests the wood was covered with Cu both inside & out.

C. The bottom- which rested [but didn't slide] on the ground- would be covered with a thicker layer -like thicker skin of human feet- to protect it from rocks that could pierce it- or termites, etc., that might damage the wood.[See Table p.203,#32,34,38] Netting might catch objects that explode out of the fire. Rings aren't attached to netting but near it -another example of עַל meaning "near to". See footnote 623.

[360] **Deut 33:2**

TRUE AND FALSE

EMES AND SHECKER[361]

אֱמֶת : שֹׁקֶר

Our messorah points out that the letters that make up אמת Emes and שקר Shecker are very different from each other. All three of the letters of Emes stand firmly and are "set like bricks". All three of the letters of Shecker stand precariously on one leg each[362]. The shin as it was traditionally written and as it is found in a kosher Sefer Torah is pointed at the bottom – not flat as it often appears in many modern Hebrew type faces.

We can also see that Emes begins with the first letter of the aleph beis, includes a letter from the middle of the aleph beis and ends with the last letter. In fact, if we take just letter shapes as we find them written in the Torah in actual words, there are 22 basic letters and there are an additional five final forms, for a total of 27 letter shapes. The 14th letter shape is the mem מ of Emes – exactly in the middle. So Emes begins at the beginning, is well centered and ends at the end.[363] It's a complete & balanced picture of whatever we're considering.

The letters for Shecker, on the other hand, are all grouped together in one part of the aleph beis. They actually are sequential letters with nothing between them – but as they're written in Shecker, they're out of order. This tells us something about the nature of Shecker. It draws its strength from the way it focuses on a narrow part of the world.

It begins with a shin – which means tooth. It can be a reference to the toothy smile of the one who introduces us to the Shecker. It may also be the toothy bite of an attacker or of pain in general. The next letter, kuf, means ape or monkey.[364] After the introduction comes the monkey show – something unusual that holds our attention. The last letter is reish -- meaning head or beginning. It suggests the rational processes that are employed to construct a false understanding of this unfamiliar part of the world.

Falsehood is not noise. It's not just nonsense. It draws its strength from our unfamiliarity with its subject matter and it combines a toothy attraction – of pleasure or pain – with a "monkey show" and a process of that attempts to make sense out of what is only a small and mixed up piece of the world. By better understanding the basic nature of truth and falsehood as revealed by the letters with which the two words are written, we can recognize each for what it is -- avoiding falsehood and building truth.[365]

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[361] Thought of in 1st years I was keeping Shabbes – but not put in notebook. It would be #125 in list. Originally, I thought kuf meant 'the back of the head' & the reference in Shecker might be to memories or deeper emotional needs.

[362] **Shabbos 104a** מאי טעמא שקר מקרבן מיליה אמת מרחקא מיליה שיקרא שכיח קושטא לא שכיח ומאי טעמא שיקרא אחדא כרעיה קאי ואמת מלבן לבוניה קושטא קאי שיקרא לא קאי

… And why does falsehood stand on one leg, while truth is set like bricks? Truth can stand, falsehood cannot stand.

[363] The last letter shape of the Aleph-Bes has two forms: ת & ת - with & without a dot. The form with a dot – the next to the last letter - is like the T in PAT. The last letter of both the Aleph-Bes & אֱמֶת has no dot. It sounds like ss in PASS in Ashkenazi Hebrew & more like the th in PATH in the traditional Hebrew of Jews from Yemen, Baghdad & Persia. The Septuagint, in pre-Christian Greek, transliterating ת, had the choice of 3 Greek letters, θ theta, Σ, σ or ς sigma & τ tau – with sounds, respectively, of path, pass & pat. It uses θ = th for שֵׁת (Seth) [Gen. 4:25]; מְתוּשָׁאֵל (Methuselah) [Gen. 5:21-27, Greek doesn't have a letter for ש sh, & substitutes sigma= s. [See footnote 520 A]; בְּתוּאֵל (Bethuel) [Gen 22:22, 24:15, 28:2]; בֵּית לֶחֶם (Bethlehem)[Gen 35:19,48:7]; רוּת (Ruth) Book of Ruth; נָתָן (Nathan) 2Sam 7:2; Esther, is from אֶסְתֵּר – though the Septuagint has Εσθηρ. Modern Hebrew makes both sound like T. אֱמֶת ending with a T sound isn't the full truth – not going from the very beginning to the very end.

[364] It's very unlikely that the letter kuf represented a monkey. Monkeys may have been imported to Mesopotamia, but were not native to the area. See more on the letter kuf & all the other letters at: "LEARNING FROM THE KSAV IVRI- כתב עִבְרִי PALEO HEBREW] ALEPH-BES" in this Sefer .

[365] Still, when the choice is between Kindness, חֶסֶד, or Truth, אֱמֶת [חֶסֶד & אֱמֶת are paired 15 times in Torah*]-Kindness is always first. Though we struggle for truth our whole life, it's only reached in the Olam HaEmes. On the way to Truth, be Kind. See, in this sefer: THE COLOR OF KINDNESS, DOING A MITZVAH WITH SHLEMES – IN A COMPLETE WAY, THE DIMENSIONS OF WISDOM & see footnote 305

* Gen 24:49;47:29; Exod.34:6; Josh 2:14; 2 Sam 2:6; 15:20; Ps. 25:10; 61:7;85:10; 86:15; 89:14; Pro 3:3;14:22;16:6; 20:28. There are 6 more in the possessive, incl. 5 where ת becomes תּ: … חַסְדּוֹ וַאֲמִתּוֹ … His kindness and His truth…Gen 24:27, Ps 57:3; … חַסְדְּךָ וַאֲמִתֶּךָ … Thy kindness and Thy truth…Ps 40:10, 40:11; "… גָּבַר עָלֵינוּ חַסְדּוֹ וֶאֱמֶת־יְהוָה לְעוֹלָם… His kindness is great toward us and the truth of the Lord endureth forever…" Ps 117:2; ". עַל־חַסְדְּךָ וְעַל־אֲמִתֶּךָ …for thy mercy, and for thy truth's sake." Ps. 115:1 [Note hyphens making compound words]. These psukim were found by searching a concordance for the combination of roots for חֶסֶד & אֱמֶת [Strong's H2617 & H571]. In Micah 7:20, the order is reversed *"Thou givest truth to Jacob, kindness to Abraham…* "תִּתֵּן אֱמֶת לְיַעֲקֹב, חֶסֶד לְאַבְרָהָם but, unlike the instances cited above, here & in other psukim where truth is first, the words aren't next to each other. Evenso, here, Abraham's Kindness preceeds Jacob's Truth in the order of events in Torah.

PILLARS OF THE WORLD

Ephraim Feinberg[366], pointed out that the expression בְּלִיַּעַל "base" or , more literally "without a yoke", occurs only twice in Chumash and both times are in the Parsha Re'eh, D'varim 11:26-16:17. The first occurrence is at D'varim 13:13-17:

כִּי-תִשְׁמַע בְּאַחַת עָרֶיךָ, אֲשֶׁר יְהוָה אֱלֹהֶיךָ נֹתֵן לְךָ לָשֶׁבֶת שָׁם--לֵאמֹר. יָצְאוּ אֲנָשִׁים בְּנֵי-בְלִיַּעַל, מִקִּרְבֶּךָ, וַיַּדִּיחוּ אֶת-יֹשְׁבֵי עִירָם, לֵאמֹר: נֵלְכָה, וְנַעַבְדָה אֱלֹהִים אֲחֵרִים--אֲשֶׁר לֹא-יְדַעְתֶּם. וְדָרַשְׁתָּ וְחָקַרְתָּ וְשָׁאַלְתָּ, הֵיטֵב; וְהִנֵּה אֱמֶת נָכוֹן הַדָּבָר, נֶעֶשְׂתָה הַתּוֹעֵבָה הַזֹּאת בְּקִרְבֶּךָ. הַכֵּה תַכֶּה, אֶת-יֹשְׁבֵי הָעִיר הַהִוא--לְפִי-חָרֶב: הַחֲרֵם אֹתָהּ וְאֶת-כָּל-אֲשֶׁר-בָּהּ וְאֶת-בְּהֶמְתָּהּ, לְפִי-חָרֶב. וְאֶת-כָּל-שְׁלָלָהּ, תִּקְבֹּץ אֶל-תּוֹךְ רְחֹבָהּ, וְשָׂרַפְתָּ בָאֵשׁ אֶת-הָעִיר וְאֶת-כָּל-שְׁלָלָהּ כָּלִיל, לַיהוָה אֱלֹהֶיךָ; וְהָיְתָה תֵּל עוֹלָם, לֹא תִבָּנֶה עוֹד.

"If thou shalt hear tell concerning one of thy cities, which the LORD thy God giveth thee to dwell there, saying: 'Certain base fellows are gone out from the midst of thee, and have drawn away the inhabitants of their city, saying: Let us go and serve other gods, which ye have not known'; then shalt thou inquire, and make search, and ask diligently; and, behold, if it be truth, and the thing certain, that such abomination is wrought in the midst of thee; thou shalt surely smite the inhabitants of that city with the edge of the sword, destroying it utterly, and all that is therein and the cattle thereof, with the edge of the sword…."

The second occurrence is several chapters later, at D'varim 15:9, where we read:

הִשָּׁמֶר לְךָ פֶּן-יִהְיֶה דָבָר עִם-לְבָבְךָ בְּלִיַּעַל לֵאמֹר, קָרְבָה שְׁנַת-הַשֶּׁבַע שְׁנַת הַשְּׁמִטָּה, וְרָעָה עֵינְךָ בְּאָחִיךָ הָאֶבְיוֹן, וְלֹא תִתֵּן לוֹ; וְקָרָא עָלֶיךָ אֶל-יְהוָה, וְהָיָה בְךָ חֵטְא.

Beware that there be not a base thought in thy heart, saying: 'The seventh year, the year of release, is at hand'; and thine eye be evil against thy needy brother, and thou give him nought; and he cry unto the LORD against thee, and it be sin in thee.

[366] Ephraim (Frank L.) Feinberg, PhD, was president of the Sephardic Congregation in Brookline, MA & a nuclear physicist at MIT.

What is the connection between a public action that results in the destruction of an entire city and the private action of withholding a loan to the poor and needy? The answer is in Perkei Avos , 1:2:

שמעון הצדיק היה משיירי אנשי כנסת הגדולה. הוא היה אומר, על שלושה דברים העולם עומד--על התורה, ועל העבודה, ועל גמילות החסדים.

"Shimon the Righteous was among the last surviving members of the Great assembly. He would say: The world stands on three things: Torah, the service of G-d, and deeds of kindness "

The act of withholding a loan from the poor and needy is an act that removes

גמילות החסדים --
self perpetuating acts of kindness [367]–

from the world. Such acts of kindness are among the three pillars on which the world stands. Removing one of those pillars destroys the world – as surely as leading a town astray after idol worship will bring the destruction of that town.

GOING OUT OF MITZRAYIM – EVERY DAY

Taivas – תאוות , usually thought of as "appetites" – narrow our paths in the "Straits" of Derech Ha Tevah- דרך הטבע. Doing Mitzvahs and not succumbing to our taivas – reminds us of going out of Mitzrayim – going out of the narrow, confining place-- the straits -- remembering "going out of Egypt" every day . [Thought of and said over, Parshas Bo, 5779, Ohr Someyach inspired by the drosha of R. Yitzchak Breitowitz, Leyl Shabbes.]

[367] See "CAMEL KINDNESS" in this sefer, for the source of my transl. *"self perpetuating acts of kindness".*

See also in this sef.: **THE FOUNDATIONS OF THE WORLD** & **THE DIMENSIONS OF WISDOM**

GUILT AND INNOCENCE

There is a well-known commentary of the Vilna Gaon[368] on the differences in the emuna -- the faith -- of two distinct groups within Bnei Yisroel – the Jewish People -- at the time they crossed the Yam Suf[369]. For the first group we learn:

וַיָּבֹאוּ בְנֵי-יִשְׂרָאֵל בְּתוֹךְ הַיָּם, בַּיַּבָּשָׁה; וְהַמַּיִם לָהֶם **חוֹמָה**, מִימִינָם וּמִשְּׂמֹאלָם.

And the children of Israel went into the midst of the sea upon the dry ground; and the waters were a wall unto them on their right hand, and on their left.

Shemos 14:22

For the second group we have, just seven verses later:

וּבְנֵי יִשְׂרָאֵל הָלְכוּ בַיַּבָּשָׁה, בְּתוֹךְ הַיָּם; וְהַמַּיִם לָהֶם **חֹמָה**, מִימִינָם וּמִשְּׂמֹאלָם.

And the children of Israel walked upon dry ground in the midst of the sea; and the waters were a wall unto them on their right hand, and on their left.

Shemos 14:29

The Vilna Gaon points out that in the first verse, the word for wall: חוֹמָה , is written with a vov – its מלא or 'complete' form. In the second verse, the same word is written: חֹמָה , lacking the vov and incomplete or חסר. He links this to the fact that in the first verse, 14:22, "the midst of the sea" comes before "dry ground" while in 14:29, the reverse is true. He says that those who were in the first group had greater faith and went into the water before the waters split – the waters opened up before them and they were then able to walk on dry ground. For them the wall: חוֹמָה, is complete, reflecting their complete faith. The second group waited for the dry land to appear and then went into the midst of the sea. They had the faith that the walls of water would not collapse upon them but had to wait for the first group to precede them. Their lesser faith is reflected in the word for wall written without a vov.

After learning this chidush of the Vilna Gaon, I began to notice places where we might learn something from "חסר ומלא" pairs of identical words in a given parsha – story. The first pair that I saw was in Vayeitzei.[370] First we read:

וַיַּרְא יַעֲקֹב, אֶת-פְּנֵי לָבָן; וְהִנֵּה אֵינֶנּוּ עִמּוֹ, **כִּתְמוֹל שִׁלְשׁוֹם**.

And Jacob beheld the countenance of Laban, and, behold, it was not toward him as beforetime. **Genesis 31:2**

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[368] **Eliyahu of Vilna , 1720-1798 , commentary on Bishalach in: אדרת אליהו**

[369] **The "Sea of Reeds" – the arm of the Red Sea that the Jewish people crossed when leaving Mizrayim – Egypt**

[370] **From #43 p46 in sefer chid. Torah**

Three verses later, when Yaakov is relating what he saw to his family, we have:

וַיֹּאמֶר לָהֶן, רֹאֶה אָנֹכִי אֶת-פְּנֵי אֲבִיכֶן, כִּי-אֵינֶנּוּ אֵלַי, **כִּתְמֹל שִׁלְשֹׁם**; וֵאלֹהֵי אָבִי, הָיָה עִמָּדִי.

and said unto them: 'I see your father's countenance, that it is not toward me as beforetime; but the God of my father hath been with me.'

Genesis 31:5

In the first verse, the expression for "as beforetime", כְּתְמוֹל שִׁלְשׁוֹם , is written "complete" – with two vovs. In the second verse it is written: כִּתְמֹל שִׁלְשֹׁם, with the two vovs missing. This suggests that in a neighborhood of people like Lavan, we should be careful to observe and remember our situation in complete detail but when we give an account of what we see to others – even to our immediate family-- we need not include everything.

In parshas Mishpotim and Shoftim there are similar "full" and "lacking" pairs of words referring to time past. At Exodus 21:29, and 21:36, we read:

וְאִם שׁוֹר נַגָּח הוּא **מִתְּמֹל שִׁלְשֹׁם**, וְהוּעַד בִּבְעָלָיו וְלֹא יִשְׁמְרֶנּוּ, וְהֵמִית אִישׁ, אוֹ אִשָּׁה--הַשּׁוֹר, יִסָּקֵל, וְגַם-בְּעָלָיו, יוּמָת.

But if the ox was wont to gore in time past, and warning hath been given to its owner, and he hath not kept it in, but it hath killed a man or a woman; the ox shall be stoned, and its owner also shall be put to death.

אוֹ נוֹדַע, כִּי שׁוֹר נַגָּח הוּא **מִתְּמוֹל שִׁלְשֹׁם**, וְלֹא יִשְׁמְרֶנּוּ, בְּעָלָיו--שַׁלֵּם יְשַׁלֵּם שׁוֹר תַּחַת הַשּׁוֹר, וְהַמֵּת יִהְיֶה-לוֹ.

Or if it be known that the ox was wont to gore in time past, and its owner hath not kept it in; he shall surely pay ox for ox, and the dead beast shall be his own.

This suggests that the standard of evidence in the case of an ox that kills a human being is less stringent than the case of an ox that was want to gore other animals. It should be easier to prove that the ox was a menace in the case of loss of human life than in the case of the loss of an animal. One might think that it should be the other way around since in the case of an ox killing a human, the verse appears to say that the owner of the ox must also be executed. However, as we learn from the Gemara in Sanhedrin 15b and Rashi's comment on this verse, the owner is not executed but will suffer death at the Hands of Heaven if he doesn't pay the required financial compensation. As, even in the case of an ox that is want to gore, there is only one vov instead of two, it suggests that the standard of evidence is not one of near perfect knowledge and that we should exercise extra caution even with potentially dangerous animals.

In Shoftim, the case is more involved. First, at Deuteronomy 19:4, we have:

וְזֶה דְּבַר הָרֹצֵחַ, אֲשֶׁר-יָנוּס שָׁמָּה וָחָי: אֲשֶׁר יַכֶּה אֶת-רֵעֵהוּ בִּבְלִי-דַעַת, וְהוּא לֹא-שֹׂנֵא **לוֹ מִתְּמֹל שִׁלְשֹׁם**.

And this is the case of the manslayer, that shall flee thither and live: whoso killeth his neighbor unawares, and hated him not in time past;

Here the expression for "time past" is written with both vovs missing[371]. Two sentences later, at Deut. 19:6, the same expression has both vovs present :

פֶּן-יִרְדֹּף גֹּאֵל הַדָּם אַחֲרֵי הָרֹצֵחַ, כִּי-יֵחַם לְבָבוֹ, וְהִשִּׂיגוֹ כִּי-יִרְבֶּה הַדֶּרֶךְ, וְהִכָּהוּ נֶפֶשׁ; וְלוֹ, אֵין מִשְׁפַּט-מָוֶת, כִּי לֹא שֹׂנֵא הוּא לוֹ, **מִתְּמוֹל שִׁלְשׁוֹם.**

lest the avenger of blood pursue the manslayer, while his heart is hot, and overtake him, because the way is long, and smite him mortally; whereas he was not deserving of death, inasmuch as he hated him not in time past.

This suggests that the manslayer who is fleeing to the city of refuge should not be so exacting with himself as far as hating the victim in time past. A small amount of bad feeling in time past will not mean that he is guilty and can't flee and save his life. The avenger of blood, however, must see the manslayer as completely free of such hatred in time past and completely innocent of deliberately murdering the victim.

After writing these three insights based on pairs of complete and incomplete words, I was told of a sefer dedicated to chidushim based on such distinctions:

חסר ומלא בתנ"ך : בסדר א"ב

אברהם בן מאיר יאקבס

[1897-1972]

This 230+ page , large format -- 28cm sefer, printed by Defus R. Ḥ. Ha-Kohen in '76 in Jerusalem, gives some additional insights into the psukim that I have covered here. On page 222, it says that Yaakov gave a less complete account to his family out of consideration for the mitzvah of honoring parents: Lavan was the father of Rachel and Leah and Yaakov spared them from hearing the worst details concerning their father.

Here are facsimiles of the texts from page רכב [222] of the sefer.

באמת יעקב ראה שכבר זמן רב לבן לא אהב אותו עוד, אבל לבנותיו, רחל ולאה איננו חפץ לומר כן, כי מחויבות הן למצות כבאו"א, ע"כ אומר להן, הרגשה חדשה היא אשר אנכי רואה מקרוב, התחיל לפני שני ימים, לשנות השקפתו אלי.

עיין ב"ב 22 תיקו אם יש חילוק בתנאים, אם המית אדם או המית שור, כמו: היש לו חזקת מועד אם שלש כיתי עדים מעידים בו ביום (רמב"ם ה' נזקי ממון 6 ה' 1). בהשואה נראה כי פ' 37 לקולא אזל: העדות צריכה להיות בימים שונים דווקא, פ' 29 לחומרא אזל: העדות אפי' ביום אחד (ע"י שלשה כיתי עדים) מחייב את בעל השור.

הדין פוסק שלא היה שנא לו, שדבר עמו אתמול עוד (סנהדרין 27) אבל לפיס את גואל הדם נאמר: דע לא שנא הוא לו מזמן רב כבר, אוהבים היו תמיד, אינו חייב, אל תמיתהו.

[371] **A similar expression also occurs in Deut. 4:42 – also with two vovs missing. Unlike the verse in Deut. 19:4, it is not paired with a verse concerning *"the avenger of blood"* -- as we have here at Deut 19:6 -- and the missing vovs are less noticeable.**

DON'T MUZZLE THE BEAST

II GATEWAY TO ANIMAL HUSBANDRY [372]

Kindness to animals and concern for their general well being are basic elements of Torah Law and Life. Every day, morning and evening, when we say the Shema[373], we remember:

וְנָתַתִּי עֵשֶׂב בְּשָׂדְךָ, לִבְהֶמְתֶּךָ; וְאָכַלְתָּ, וְשָׂבָעְתָּ.

And I will give grass in thy fields for thy cattle, and thou shalt eat and be satisfied. **Deut. 11:15**

From this we learn that before we eat, we should make sure that the animals in our care also have their food.

Though we are permitted to have animals work for us, we must be considerate of them even as they are working. We are not permitted to overburden an animal and must help even someone who hates us to unload their overburdened beast[374].

כִּי-תִרְאֶה חֲמוֹר שֹׂנַאֲךָ, רֹבֵץ תַּחַת מַשָּׂאוֹ, וְחָדַלְתָּ, מֵעֲזֹב לוֹ--עָזֹב תַּעֲזֹב, עִמּוֹ.

If thou see the ass of him that hateth thee lying under its burden, thou shalt forbear to pass by him; thou shalt surely release it with him. **Exod 23:5**

We are also not permitted to overburden an animal emotionally. On the verse:

לֹא-תַחְסֹם שׁוֹר, בְּדִישׁוֹ.

Thou shalt not muzzle the ox when he treadeth out the corn. **Deut. 25:4**[375]

our sages taught that this doesn't only prohibit physical muzzling. It also prohibits emotional muzzling. Shouting at a working animal so that it's too frightened to eat the food it is helping to prepare is considered a transgression punishable by flogging.[376]

Animals are not only interested in food. Some of their strongest urges and feelings are centered on procreation. The drive to reproduce is even a byword for the animal quality in all creatures – including humans. Yet, unlike humanity, the animals were not explicitly commanded to be fruitful and multiply. Instead of a clear blessing or command directed at animals, we find an unusual statement spoken to one human being. That one person was Noach – the Tsadik – the Righteous Man – in his generations.[Gen 6:9]

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[372] **This piece was #111 – not in Sefer Chidushi Torah. Originally conceived after visiting an Earthday Fair in NYC, 5769 (Spring'09). For a beautiful story of how people treat wild animals in a Torah oriented city, Bne Braq, Israel, see : Physical Characteristics of Spiritual City in the author's sefer: וּבְלֶכְתְּךָ בַדָּרֶךְ "As Thou Goest By The Way."**

[373] **The Shema includes 3 paragraphs from the Torah : Deut.6:4-9; Deut.11:13-21; Numbers 15:37-41**

[374] **There are clear metaphorical associations with this and similar laws concerning animals gone astray/lost. Exod. 23:4, 5, Deut 22:1 – the animal quality of the human being.**

[375] **"By stating the prohibition against muzzling immediately after the law of malkus [lashes] [Deut 25:3] the Torah indicates that the prohibition agasint muzzling is the prototype for all prohibitions tht incur malkus." 13b, line 21, Tal Bav. Schot., '01·**

[376] **ואפילו חסמה בקול דהיינו שצעק עליה ועל ידי זה לא תאכל חייב מלקות**

"and even muzzling by one's voice, e.g.; one shouted at it so that it wouldn't eat, is liable to punishment."

(The punishment would be "Stripes - being beaten across the back and front with a strip of doubled leather. From 3 to 39 strokes were given depending on the offence" **Kitzur Shulchan Aruch 186:1, Linear Translation by Yona Newman© 1999-2008. http://www.yonanewman.org/kizzur/kizzur186.html .**

After the Mabul – the Great Flood – we learn, at Bereishis 8:15-17 :

וַיְדַבֵּר אֱלֹהִים, אֶל-נֹחַ לֵאמֹר. צֵא, מִן-הַתֵּבָה--אַתָּה, וְאִשְׁתְּךָ וּבָנֶיךָ וּנְשֵׁי-בָנֶיךָ אִתָּךְ. כָּל-הַחַיָּה אֲשֶׁר-אִתְּךָ מִכָּל-בָּשָׂר, בָּעוֹף וּבַבְּהֵמָה וּבְכָל-הָרֶמֶשׂ הָרֹמֵשׂ עַל-הָאָרֶץ--הוצא (הַיְצֵא) אִתָּךְ ; וְשָׁרְצוּ בָאָרֶץ, וּפָרוּ וְרָבוּ עַל-הָאָרֶץ.

And God spoke unto Noach, saying: 'Go forth from the ark, you and your wife, your sons, and your sons' wives with you. Every living being that is with you of all flesh, of birds, of animals, and creeping things that creep on earth – order them out with you, and let them teem on the earth and be fruitful and multiply on the earth'[377] **[EMPHASIS ADDED]**

Here, the commentators say, Noach and his sons are told to reunite with their wives – after being separated from them on the ark for over a year. The land animals and winged creatures, which had similarly been separated by gender on the ark, were also to reunite with their natural mates. Still, פָּרוּ וְרָבוּ "be fruitful and multiply" is not spoken directly to them.[378] It is spoken to Noach. Noach is to order them out of the ark אִתָּךְ with you[379] and not obstruct them but rather let them be fruitful and multiply. Noach – and his descendants -- all humanity – are to be facilitators of the animals in their natural processes of reproduction. In response to this instruction, כֹּל רוֹמֵשׂ עַל-הָאָרֶץ... "...everything that moves on earth **..." came out of the ark: ...לְמִשְׁפְּחֹתֵיהֶם... "... by their families..." grouped and paired and ready to reproduce their own kind.[380]**

This is not the situation that we have today. In the last half century, the way most of the animals in the direct care of humanity are treated has been radically transformed. In the industrialized countries – like the United States -- the animals that supply nearly all of our meat, dairy and eggs are no longer grouped by their families. They have been reduced to biological food production systems on what are called factory farms. Animals are almost never allowed to reproduce in a natural way. As once – in the time before the flood – the animals mingled across species, now – in the care of humanity – they are not allowed to mingle – to have reproductive relations – even with their own kind.

What can this mean for the emotional well being of these animals? If we are subject to flogging for frightening a single animal into not eating for a few hours or less while it is helping us to process food, what are we liable to here[381]? Here, on these factory farms, we are preventing scores of billions of animals from having any natural reproductive relations in their entire lives – even while they are "helping us to process food". It

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[377] **The English here is taken from "Sefer Bereishis. Genesis/ A New Translation with a Commentary Anthologized From Talmudic, Midrashic and Rabbinic Sources" . By Rabbi Meir Zlotowitz, first edition, June 1977. The expression "**order them out with you, and let them" **is based on the traditional significance (Rashi) of the difference between the written and spoken versions of one word:** הוצא (הַיְצֵא) . **The word with the vowels is what is spoken: "let them." The word without the vowels is what is actually written in the Torah: "order them out".**

[378] **That expression was applied to water creatures at the time they were brought into being on the 5th day at Genesis 1:20-23 and to Adam and Chava on the 6th day at Genesis 1:28.**

[379] **"With you" seems superfuluous suggesting parallelism with the previous "with you". The animals should be reunited with their mates and be "with you" in your concern for their welfare.**

[380] **Gen.8:19. From the fact that רוֹמֵשׂ 'moves' here is written with a vov & elsewhere, without a vov, R Yochanon said that the children of Noah were enjoined from castrating animals. Midrash Rabbah, Gen. XXXIV.8, Soncino p. 271-2. Also, they weren't mingling across species as they'd been doing before the flood. From Gen. 9:7: "...** שִׁרְצוּ בָאָרֶץ, וּרְבוּ-בָהּ **..."**"...swarm in the earth, and multiply therein."-- **one of the sages of the Talmud, at Sanhedrin 57a, line 9, understood that all descendents Noach were forbidden to do any act that would prevent procreation.**

[381] **It may be that a single shout intended to frighten the animal into not eating is all that it takes to incur flogging.**

looks like we are causing צער בעלי חיים Tsar Baalei Chaim -- forbidden suffering of animals -- on a cosmic scale.

But what is Tsar Baalei Chaim? Clearly, "it is permissible [to cause pain to animals] in order to satisfy human needs, by slaughtering animals for food, or by employing animals to plow, to carry burdens or other such things."[382] However, for each of these and similar traditionally permitted uses, there are clear Torah Laws that sharply limit the suffering we may inflict on the animals we employ. In the case of using animals for food, the process of shchita – ritual slaughter – is intended to be almost painless.[383]

In the case of plowing we have at least three laws. One is that we can't yoke an ox and a donkey together.[384] Being able to use these two animals together would save money and time. The farmer would not have to own two donkeys or two oxen or borrow one or the other from a neighbor. Yet the suffering that the weaker animal might experience in this situation is enough to prohibit it.

Castrating the ox – or donkey - would also appear helpful. It would make them more docile – more manageable. Also, it should be clear, the act of castration is not what we are concerned about here as far as causing unnecessary suffering to the animal. Castration can be done painlessly. It can even be done with drugs – rendering the animal impotent, sterile and free of the emotions that accompany the drive to reproduce. Even so, it is prohibited.[385]

The third law is that the animals in our care can't be used to plow or do any other kind of work on the Sabbath. On Shabbes they must rest and can't be shechted.

The result of these and other restrictions[386] is that, whatever we do with an animal, we have to be concerned about that animal's well being – not to cause any animal unnecessary pain or suffering. But these laws don't only protect the animal from the harms that we might cause. They protect us from causing the harm. They guard us against the insidious cruelty that comes from regularly and carelessly inflicting pain on other creatures. They also open the door to kindness.

At each point where we could inflict suffering on an animal and we don't, we expel a measure of cruelty from the world and create a measure of kindness. Kindness is the key to the Derech HaShem – the Way of God. The Chofetz Chaim[387] said:

> ***"The essence of Torah is kindness. If something is not done in a kind way -- in a nice way -- it's not Torah. It's the seal of authenticity of a Torah act – like the stamp that says something is 24 carat gold."*** **[388]**

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[382] Rabbi Moshe Feinstein, Igros Moshe, Even HaEzer V. 4 resp. 92 pt II. This is Reb Moshe's tshuva forbidding the production of veal. Among other things he notes that calves raised for veal "have never tasted their mother's milk." For a very thorough treatment of Tsar Baalei Chaim, see: "Sefer Nefesh Kol Hai" (The Book of 'The Soul of Every Living Thing', (Job 12:10)) by Yitsḥaḳ Eliyahu ben Mosheh Shṭesman, **330+ p., 5762 ('02), Jerus.**
ספר נפש כל חי : בדיני צער בעלי חיים, טיפול ושמוש בבעלי חיים והאכלתם בחול ובשבת / נערך ע"י יצחק אליהו בלאאמו"ר משה שטסמן.

[383] These laws are derived from Deut. 12:21 -- particularly the words " as I have instructed you."

[384] Deut. 22:10

[385] It inflicts a kind of spiritual suffering – both on the animal and the one who does it.

[386] Don't be like Bilaam – don't beat an animal: Bamidbar 22:32 [Rambam in Moreh Nvuchim 3:17]; Send away the mother bird. Dev. 22:6-7; Don't kill mother and offspring on the same day, Vayik. 22:28; "Don't seethe a kid in its mother's milk" Exodus 23:19, Exodus 34:26 and Deuteronomy 14:21.

[387] The Chofetz Chaim, Rabbi Yisroel Meyer HaCohen, depicted below, was one of the most universally loved and respected rabbis of the last several hundred years. [This is a duplicate of another footnote.]

Today, the factory farm system not only creates Tsar Baalei Chaim on a cosmic scale and magnifies cruelty in the heart of our society -- it also eliminates the innumerable acts of kindness that came with traditional forms of animal husbandry[389].

This vast increase in cruelty and reduction in kindness has made itself felt physically. In richer countries – where these factory farms abound – the modern diet – often including meat and dairy in three meals a day, seven days a week – has greatly increased heart disease and shortened lives[390]. At the same time, grain fed to animals has driven up the price of grain globally, reducing the availability of basic food to the world's poorest people[391]. The animals themselves – raised in numbers far higher than what is good for our health – are leading producers of methane. They're a large and rapidly increasing factor in global climate change[392].

So what should we do? We should eat healthy, non-animal based foods and reduce our consumption of meat and dairy to where it stood in our lives a century ago – and back to the time of Avroham Avinu. Meat in particular was -- and should be -- only a special food for Shabbes, Yom tov and Simchas. Then we can truly say on a small piece of meat: "L'chvod Shabbes Kodesh" – "In honor of the Holy Sabbath"[393]. We should also try to see that whatever animal products and services we do use – including not only food, but skins, furs, educational programs[394] and biomedical research – involve treating animals according to the spirit of Torah Law. We should be prepared to spend more for these – just as we do with other items that we need to honor our Torah obligations.

This may seem to be going beyond the requirements of Torah Law. There are reasonably good hekshers – kosher certifications -- on meat and dairy produced under the supervision of widely loved and respected Torah Leaders – like Rabbi Yisroel Belsky, Shleeta. These hekshers do not, however, reflect the manner in which the animal was raised. They only show that the product is from a kosher species, and, in the case of meat, that it was slaughtered according to Torah Law and met Torah standards for the health of the animal at the time of slaughter. The kosher food industry has been almost blindsided by the competitive rush to the factory farm system. Our rabbis need us to help them catch up. They need us to increase the demand for animal products and services that

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388 This was related to me in the name of the Chofetz Chaim by Rabbi Yitschok Poupko, Z'TsL, in the late summer of 5748 ('88).[#89, p90, Sefer Chid. Torah] I spoke to him both by phone from Boston, Massachusetts and in his home in Brooklyn, NY. Rabbi Poupko had been a "ben bayis" of the Chofetz Chaim for ten years and had served the Chofetz Chaim as his personal secretary for the last three years of the Chofetz Chaim's life. Rabbi Poupko added that "though the slaughter of the Midianites (Num31:1-54) doesn't appear to be kind , nonetheless this is the basic principle." At that time, Rabbi Poupko also taught me two other things in the name of his great teacher.

THIS COULD BE THE FIRST PHOTO OF THE CHOFETZ CHAIM MADE FOR PUBLIC DISTRIBUTION WITH, AT LEAST, HIS TACIT PERMISSION. CUT FROM A PHOTO OF >30 DELEGATES TO A RABBINICAL CONFERENCE, IN WARSAW IN ~1917[ENCYCL. JUDAICA, 1971, V. 16, COL. 341-2.].

THE SEFER: "WISDOM AND WIT: A SPARKLING TREASURY OF JEWISH ANECDOTES AND ADVICE", BY SHMUEL HIMELSTEIN, MESORAH PUBLICATIONS, 2003, P. 210, HAS A STORY OF HOW THE WELL-KNOWN PICTURE OF THE CHOFETZ CHAIM CAME FROM AN UNAUTHORIZED COPY OF A PASSPORT PHOTO. THIS IS FOLLOWED ON THE SAME PAGE IN THE SEFER BY A STORY OF A TRIP TO WARSAW

THE SOURCES FOR THESE STORIES ARE NOT GIVEN IN THE SEFER AND ARE BEING SOUGHT BY ASA.

2. ~"The purpose of davening [prayer] is not to beg God but to come closer to God. We should say every word in davening clearly as though there is someone listening to every word." Rabbi Poupko added here that when the Chofetz Chaim was the sheliach tsibor [the prayer leader], he would daven more quickly – so as not to keep the people waiting.

3. ~"A true teacher of Torah encourages his students to ask questions and is not afraid of apparent contradictions."

These 3 things correspond to the 3 things on which the world stands: 3= Torah; 2= Avoda; & 3= Gemilus Chasadim. [Perkei Avos 1:2] Thought of at Aish Ha Torah, Jerusalem, 1/25/15.

389 See also, in this sefer: "Camel Kindness…" & "Love Thy Neighbor…", for how we learn self-perpetuating acts of kindness & global concern for others from camels & pasturing sheep, respectively. See also, in this sefer: The Foundations Of The World & The Dimensions Of Wisdom

390 'Intake of *trans* fat and all-cause mortality…' J. Kiage, et al. Am J Clin Nutr 5/'13, p 1121-8

391 "The Impact of Industrial Grain Fed Livestock Production on Food Security:…", K-H. Erb, et al, Institute of Social *Ecology, Alpen-Adria University, Vienna , Austria, 2/12*

392 See "Issues and options in addressing the environmental consequences of livestock sector's growth" P.J. Gerber, et al. / Meat Science 84 (2010) 244–247; Livestock's long shadow – Environmental issues and options. Rome, Italy, H. Steinfeld, et al, 2006. FAO.

393 There are those who want to completely eliminate the consumption of meat and dairy. Though this would remove the problem of consuming something that is produced by illegitimate means, it would also create the appearance that it is forbidden to consume meat and dairy at all – while both are clearly permitted.

394 One of the most widespread abuses of animals comes in biology classes where students are taught to dissect live frogs, etc.

are not only free of forbidden blemishes but free of the potential to blemish our neshama – our soul -- with the unnecessary pain and suffering of the animals that serve us.

Nearly two thousand years ago, one of our greatest sages, R. Yehudah HaNasi, had an encounter with a calf on its way to slaughter.[395] The calf pleaded with the sage for mercy and the sage only replied that this was the purpose for which the calf was created. For showing no mercy to the calf, it was decreed in Heaven that the sage should suffer pain everyday thereafter. For thirteen years the sage suffered pain until the day he rescued some small wild creatures that were found in his home. For showing mercy to these creatures, his pain was removed.

On both occasions the sage acted publicly. He publicly showed no mercy to the calf – even though the calf was bound for slaughter and the slaughter was permissible by the strict letter of the law. He publicly showed mercy to the small creatures found in his home – though it was permissible by the strict letter of the law to treat them roughly to get them out of his house. He was punished because, if the sages of our people act only by the strict letter of the law in areas of mercy, the lesser lights among us – almost all of the rest of us – will be even less merciful in general and come to violate even the strict letter of the law. Similarly, when our sages act with great kindness and mercy – far beyond the strict legal requirements -- the rest of us will be kinder and more merciful and at least keep the letter of the law. It is why "Tsadikim are judged to a hair's breadth."[396]

But it is said: עַמְּךָ כֻלָּם צַדִּיקִים [397]. Those of us who are familiar with the strict letter of the law in an environment where all too many are ignorant even of its basics, must go beyond the minimum requirement to set a better example for others. Each of our personal public acts of refusing to benefit from Tsaar Baalei Chaim creates a spark of kindness and dvakus -- attachment to God. By sharply reducing our consumption of meat and dairy we'll hasten the time when all will follow The Ways of Kindness – the Derech HaShem.

...A DINNER OF HERBS...[398]

The more efficient land, food & water utilization that comes from shifting our grain from animal feed to bread for people,[391, 392, 349-F] suggests a practical explanation for the availability of food in the Sabbatical and Jubilee years[401] – without requiring bulging granaries in the 6th year.

וְכִי תֹאמְרוּ מַה־נֹּאכַל בַּשָּׁנָה הַשְּׁבִיעִת הֵן לֹא נִזְרָע וְלֹא נֶאֱסֹף
אֶת־תְּבוּאָתֵנוּ: וְצִוִּיתִי אֶת־בִּרְכָתִי לָכֶם בַּשָּׁנָה הַשִּׁשִּׁית
וְעָשָׂת אֶת־הַתְּבוּאָה לִשְׁלֹשׁ הַשָּׁנִים:

"And if ye shall say, What shall we eat the seventh year? Behold, we shall not sow, nor gather in our increase: Then I will command my blessing upon you in the sixth year, and it shall bring forth fruit for three years." [Lev. 25:20, 21]

In the same context, we also learn:

וְהָיְתָה שַׁבַּת הָאָרֶץ לָכֶם לְאָכְלָה לְךָ וּלְעַבְדְּךָ וְלַאֲמָתֶךָ
וְלִשְׂכִּירְךָ וּלְתוֹשָׁבְךָ הַגָּרִים עִמָּךְ: וְלִבְהֶמְתְּךָ וְלַחַיָּה אֲשֶׁר
בְּאַרְצֶךָ תִּהְיֶה כָל־תְּבוּאָתָהּ לֶאֱכֹל

"<u>And the Sabbath of the land shall be food</u> for you; for thee, and for thy servant, and for thy maid, and for thy hired servant, and for thy stranger that sojourneth with thee, and <u>for thy cattle, and for the beast</u> that are in thy land, shall all the increase thereof be food."[Lev 25:6,7]

So the animals are generally expected to fend for themselves and not be stall fed. The result is much more food for all the people and much less fatty meat on the tables of a rich minority. There's also a lot of seed laden ruminant manure left to fertilize and plant the land.

When the people have the Emuna –Faith- that there will be food, they will practice Shmita – and there will be enough for all.

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[395] From Talm. Bavli, Bava Matzia 85a & other sources cited by Noah J.Cohen in:'Tsar Baale Haim...' 2nd Edition , '76, Feldheim, p 4.

[396] This 13 yr "Bar Mitzvah" of Yehudah HaNasi [165-220CE] is analogous to the 13 yr Bar Mitzvah of Yoseph HaTsadik when he spent 13 yrs as a slave & prisoner in Mitzraim. See, in this sefer: **"Yoseph In Mitzraim – 13 Years A Slave".** R Shimon bar Yochai [100-160CE]& his son Eleazar, spent 13 years hiding in a cave studying Torah. They had to escape & hide in the cave after R. Shimon criticized Rome & won a death sentence for his words. For more on R. Shimon's comment on Rome, see, in this sefer, at **Bowing Seven Times -- But Not Eight**

[397] See, in this sefer: **"The Lomed-Vov Tsadikim: The 36 Hidden Righteous People Upon Whom The World Stands"** , **"Yoseph In Mitzraim: 13 Years A Slave"** & **The Dimensions Of Wisdom**—partic. see footnote **562-A**

[398] Thought of at the Shabbes table of R. Shalom and Zelda Horowitz in Hebron, Behar 5779, when the question was raised of why the people were considered so meritorious for believing that God would supply food in the Sabbatical and Jubilee years – if the granaries were so full in the 6th year.

The title of this – "A Dinner of Herbs" -is from the book of Proverbs: טוֹב אֲרֻחַת יָרָק וְאַהֲבָה־שָׁם מִשּׁוֹר אָבוּס וְשִׂנְאָה־בּוֹ: "Better is a dinner of herbs where love is, than a fatted bull with hatred." [Prov. 15:17]

MITZVAH IMMERSION

The mikveh is often referred to as a mitzvah of full immersion. When we submerge our bodies in the mikveh we are completely encompassed by the water – and, it would seem, completely immersed in the mitzvah. But in a few minutes we come out of the water. In reality, though our bodies are truly immersed in the mikveh while we are in it, our life certainly is not. There are obviously many things – many other mitzvahs -- that we can't do in the mikveh. We can't say Kiddush while immersed. We can't even breathe.[399]

In a succah we are also immersed in a mitzvah. We are completely surrounded -- top, bottom and sides -- by the laws of the succah embedded in its physical reality. We are actually supposed to "dwell" in the succah. We can even sleep there -- and many do. But the succah too – despite the instruction to "dwell" there – does not really allow for the full immersion of our life. There are still mitzvahs that we can't do in a succah. We can't even answer nature's call there.

With Shabbes, it appears we are really immersed in a mitzvah. Everywhere we go and everything we do on Shabbes brings with it reminders of the special time – the special mitzvah – we are fully immersed in. But here too, the immersion is incomplete. There are mitzvahs that we can't do on Shabbes. We can't bake matzah or put on t'fillin on Shabbes – and, of course, we can't build a Mishkan – a dwelling place for God -- on Shabbes – even though that may be what our lives during the six days should be about[400].

Maybe the mitzvah of observing the Torah calendar throughout the year is a mitzvah of full immersion? In this "omnibus mitzvah" we have Rosh Chodesh and Shabbes and Weekdays and Yom-Tovim. We also have all the times for prayer and fasting and observing yahrtseits. But still, a single year does not completely encompass our lives as Bnei Torah. For example: What about the sabbatical year? A single year can't be both sabbatical and not sabbatical.

So it seems that the only mitzvah in which we're completely immersed – in all the details of our lives – is a mitzvah that extends beyond a single year. It is either the mitzvah of the seven year sabbatical cycle or the 50 years of the Yovel[401] -- both of them lived in the Land of Israel. Each year in the sabbatical or Yovel cycle has its own importance. The nature and distribution of tithes on crops differs for the different years within the sabbatical cycle. In the Yovel cycle, land is bought and sold with the value based on the number of years to the next jubilee. Then, in the 50th year, we enter the beginning of the 8th septade or septanate. Eight here, like the eighth day of bris-milla[402] and the beginning of the eighth week that brings Shevuos, reminds us of things beyond the natural world. It reminds us of the ability to correct things in the past – to travel back in time – to return to the more careful observance of all mitzvahs. We return the land to its original owners and rejoice in the fulfillment of all mitzvahs in a life immersed in the mikvah -- the gathered, purifying waters – the hope[403] -- of the Derech Hashem.

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[399] **The mitzvahs of immersion in a mikvah are based on: Exod. 29:4, 40:12, Lev. 14:6-9; 15:5-10, 13, 16, 19-27; 16:24; 17:15; Numbers 19:7-8**

[400] **See, "THANKSGIVING AND THE SIX DAYS…" in this sefer,**

[401] **Lev. 25:1-7; Deut. 14:22-29; 26:12, 28:14 (on the sabbatical cycle). Lev. 25:8-54; 27:17-18; Numbers 36:4 (on Yovel). The 50 year cycle of the Yovel is applicable when all of the 12 tribes of Israel are living on their respective lands in the Land of Israel. This has not been the case since the Babylonian captivity, about two and a half thousand years ago.**

[402] **Gen 17:12, Lev 12:3**

[403] "…מִקְוֵה יִשְׂרָאֵל יְהוָה" Thou hope of Israel, the LORD!... **Jeremiah 17:13**. **The words for hope and mikvah are the same. See, in this sefer, link between hope & mikvah in HOPE II GATEWAY TO HYDROGEOLOGY.**

HOPE*

II GATEWAY TO HYDROGEOLOGY

There are two words in Hebrew that appear to have no relationship to each other but which are spelled and pronounced the same way: the word מִקְוֶה - mikveh – for the body of water in which we immerse ourselves for ritual purification[404] -- and מִקְוֶה, the word for Hope[405].

The mikveh in which we immerse ourselves is made of water that has, for the most part, been collected by natural processes. It is not water that has been collected by our efforts – though the structure of a mikveh may be entirely built by us. The largest kosher mikveh is the ocean[406]. The smallest is just large enough for an adult to fully immerse their body[407]. In Israel there are many small natural mikvot – natural springs – that have been used for ritual purification for thousands of years[408].

The Ocean Mikveh and these small natural springs have something in common that gives us insight into the meaning of Hope. They both collect water from their surroundings -- with much of it flowing underground and invisible to us. In the case of the ocean, it is filled not only by these underground, invisible, often anastimosing streams[409] but by innumerable small creeks, wadis and rivulets that by themselves appear to be of little consequence – particularly in comparison with the great rivers. Both the spring and the ocean collect water from both the area nearby – the area that we can see clearly if we stand on the seashore or on the edge of the spring – and from very far away – far beyond the horizon – from land that we may not even know exists.

This is the nature of Hope. It is an attitude that looks out at the world and sees what can't be seen. It understands that there are streams flowing in the world from places that we don't know and in ways that we can't see. It senses that these innumerable streams -- perhaps small and seemingly inconsequential by themselves -- will come together -- will be collected -- for a good and ultimately purifying end.

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[404] **Shem 29:4, 40:12 (ritual purification of the Cohanim) Lev 15:1-33 (purification of the body after flows of certain bodily fluids from orifices in the genital area). Numbers 19:1-22 (purification after contact with the dead & related issues.) Numbers 31:22-23 (purification of vessels that may have been used for idol worship.)**

[405] מִקְוֵה יִשְׂרָאֵל יְהוָה, כָּל-עֲזְבֶיךָ יֵבֹשׁוּ; יסורי (וְסוּרַי) בָּאָרֶץ יִכָּתֵבוּ, כִּי עָזְבוּ מְקוֹר מַיִם-חַיִּים אֶת-יְהוָה.

Thou hope of Israel, the LORD! All that forsake Thee shall be ashamed; they that depart from Thee shall be written in the earth, because they have forsaken the LORD, the fountain of living waters. **Jeremiah 17:13**

[406] **The first use of the term מִקְוֶה mikveh in the Torah is in the story of the creation of the Seas:**

וַיִּקְרָא אֱלֹהִים לַיַּבָּשָׁה אֶרֶץ, וּלְמִקְוֵה הַמַּיִם קָרָא יַמִּים; וַיַּרְא אֱלֹהִים, כִּי-טוֹב.

And God called the dry land Earth, and the gathering together of the waters called He Seas; and God saw that it was good. **Genesis 1:10**

[407] **The smallest mikveh is 40 *saw* = 5,760 beitza =332 to 573 liters. This range is result of a dispute between R. Avraham C. Na'eh, (1890–1954) (*Shiurei Torah*) & R. Avraham Y. Karelitz (1878-1953), *Chazon Ish*, *Orach Chaim* no. 39, on the size of a *beitzah*. The Gemara, *Pesachim* 109a, says a *revi'is* (1/4th *log*) = 2x2x2.7 *etzba'ot* (fingers).**

If, as the *Chazon Ish* assumes, an *etzbah* is 2.4 cm, the *revi'i*s is 149.3 ml. A *beitzah* is 2/3 of a *revi'is* (Rashi, Shemot 16:36) or 99.5 ml. R. Na'eh's *etzbah* = 2.0cm. & his *beitzah* = 57.6 ml. He holds that this includes the shell. [Partly from _____] One of the largest standard egg sizes, including the shell, is the King Size of Australia at 70-78 gms. 46.5% of eggs produced in Canada in '07 were"Grade A, Large" 56-62.5 gms. _____ The vol. in ml. is 5-10% less – depending on freshness.

6 Beitza=1 Log; 4 Log=1 Cab; 6 Cab=1 Saw; 3 Saw = 1 Ephah (SeBLFLaCSCuSTE mnemonic [Also 10 Omer =1 Issaron =1 Ephah; 1 Hin = 12 Log. -). According to some poskim a kazais "olive size" = .33 to .5 beitza. Atlas Olives, among the largest commercial olives today, are 11 - 14 gms ea. "[T]he Rabbis have calculated that הבליעה the [throat] cannot hold more than two olive-sizes at a time" [K'rithoth 14a]." [T]he Sages measured that הבליעה [throat] cannot hold more than the size of a hen's egg"[Yoma 80a]". "[T]he Gra (O.C. 486) suggests that the Gemara there refers to eggs without the shells." I think that the Gra assumes a raw or compressible-soft egg. _____

[408] **The Ari Mikve in Safed, Israel and many others have been used for millennia.** * **From #27, p64, Sefer Chidushei Torah**

[409] **Jewish Tradition is often like an anastimosing stream – repeatedly finding separate ways around obstacles and then reuniting.**

THE LIGHTHOUSE

In the 2nd verse of the haftorah of Biresihis[410], we read the famous words of Isaiah:

אֲנִי יְהוָה קְרָאתִיךָ בְצֶדֶק, וְאַחֲזֵק בְּיָדֶךָ ; וְאֶצָּרְךָ, וְאֶתֶּנְךָ לִבְרִית עָם--לְאוֹר גּוֹיִם.

I the LORD have called thee …for a light to the nations. **[Isaiah 42:6]**

In Bechukosai we learn what will happen if the "light to the nations" – the Jewish People -- fails in its responsibility to the people of the world:

And you will I scatter among the nations… וְאֶתְכֶם אָזָרֶה בַגּוֹיִם **[LEV. 26:33]**

We also learn, that after a being scattered, we will return spiritually and then physically to the Land where our light will shine again:

קוּמִי אוֹרִי, כִּי בָא אוֹרֵךְ...וְהָלְכוּ גוֹיִם, לְאוֹרֵךְ... יֶהֱמוּן יָם, חֵיל גּוֹיִם יָבֹאוּ לָךְ.

Arise, shine, for thy light is come…and nations shall walk at thy light… the abundance of the sea shall be turned unto thee, the wealth of the nations shall come unto thee.**[Isaiah 60:1,3,5, excerpts]**

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A PARABLE: Imagine some good, reliable people put in charge of a lighthouse in a very dangerous part of the sea. It's a very big, comfortable lighthouse and, after a while -- after a few generations -- there haven't been accidents for some time, and they begin to forget about the dangers and about their special work. They stop keeping the light and start having a big party. They're very generous and they want to share their fun with the other people -- with all the ships at sea. They set up giant speakers on the lighthouse and, instead of the light, they beam their party music out over the Ocean.

What happens? The Ships come closer to hear the music better and they're wrecked on the rocks that the lighthouse was supposed to warn them of. Whoever put these people in charge of the lighthouse, will not be pleased. It would be better that the lighthouse should be empty than full of such people. It is understood, though, that the people did not act intentionally to cause so many ships to be wrecked. The "should-be" lighthouse keepers had forgotten about the dangers and didn't know the terrible effect their partying would have on others. So they are given an opportunity to learn what is going on out there in the sea -- where the rocks are wrecking so many ships on a daily basis. The beautiful, comfortable lighthouse is closed down and the lighthouse keepers are set afloat in the sea in many small boats to discover, at first hand, what is going on and to realize the special importance of their work.

Only after many years of floating among the other ships and seeing and experiencing the terrible devastation that comes when there is no light in the lighthouse, do they realize what they have done. They have a profound sense of the tragedy they have brought upon the world and an even more profound sense of what they must do to rectify their mistakes. Then they are allowed to return to be the Keepers of the Light-- "A Light to the Nations"
[Adopted from an email to my niece, Shoshana, on her arrival in Israel, Elul 28, 5759 (9/9/99) #65, p.49]

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[410] **Isaiah 42:5-43:10**

GUARDIANS OF THE SOUL

Torah is a way of life. Wherever we go, whatever we do and whatever we say is governed by Torah. The way we look is also governed by Torah. We learn:

לֹא תַקִּפוּ, פְּאַת רֹאשְׁכֶם ; וְלֹא תַשְׁחִית, אֵת פְּאַת זְקָנֶךָ.

Ye shall not round the corners of your heads,
neither shalt thou mar the corners of thy beard.
LEV. 19:27

This, of course, applies to men. These laws, in effect, create shomrim – guardians – surrounding the face of a Jewish man at each of the corners of the beard and hair that are left uncut.

Women are also guarded by mitzvahs in their appearance. They are required by Torah law to cover their upper arms, their thighs and the rest of the body up to the collar bone[411]. These five areas are the shomrim – the guardians -- for the modesty of a Jewish woman. These shomrim give women special points of attachment to the Derech Hashem in walking humbly before God whenever they appear in public[412].

They also have another function that's equally important. They're double duty shomrim for the men who might see them. First, they tell the men – the religious Jewish men – that these are tsneusdic -- modest -- Jewish women. They also tell them something else. Whenever men might notice parts of a woman that should be covered but aren't, these five shomrim for modesty alert the men to quickly avert their eyes. The shomrim of the tsneus of modest women turn the ervah of the immodest into mitzvahs for the men who turn away.

All mitzvahs are shomrim for the kidusha of the parts – the corners -- of the physical world they are most closely associated with. They're presence adds kidusha to the world and opportunities for dvakus – attachment to God. Their absence alerts us to a need for improvement – to strengthen the process of Tikun Olam.[413] [414]

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[411] **Married women also cover their hair [Num. 5:18] . Mishnah Berurah 75:1, based on Gemara Berachot, 24a. Those who are more careful also cover knees, elbows and a tefach (handbreadth) below both.**

[412] הִגִּיד לְךָ אָדָם, מַה-טּוֹב ; וּמָה-יְהוָה דּוֹרֵשׁ מִמְּךָ, כִּי אִם-עֲשׂוֹת מִשְׁפָּט וְאַהֲבַת חֶסֶד, וְהַצְנֵעַ לֶכֶת, עִם-אֱלֹהֶיךָ.
It hath been told thee, O man, what is good, and what the LORD doth require of thee: only to do justly, and to love mercy, and to walk humbly with thy God. **[MICAH 6:8]**

[413] **Most of this chidush was conceived in 5761 after a then unmarried daughter of a well known Rabbi rolled her sleeve up just above the elbow while sitting across from me at the Shabbes table. She was wearing an uncomfortable dress that had a seam just where her elbow was. The same event also inspired another chidush; See in this sefer: "WHY MEN HAVE BEARDS – AND WOMEN DON'T ח GATEWAY TO ZOOLOGY."**
From #124

[414] **The 'PS' at right is from a typed and revised letter to H.R.C. and zc, 7th day of Chanukah 5761.**

PS: Since I wrote this, it occurred to me that the five t'fachim (for the five major extremities) might be thought of as shomrim and might be analogous in some way to the five points of a man's beard. Perhaps we could understand that any mitsvah -- like the peyes of a field or of a face -- becomes a shomer of the kedusha of what it is most closely associated with.....

THE BOOMERANG

II GATEWAY TO ANTHROPOLOGY AND AERODYNAMICS [415]

There are many seemingly well educated people who use the platform of their education to belittle Torah and those who are careful to observe its precepts. These people – often professionals with advanced academic degrees in the sciences -- point to the Torah and ask: What did those Rabbis of thousands of years ago know about quantum mechanics or particle physics or semiconductors or lasers? In the minds of these critics, if the Rabbis – the sages of the Talmud – were not up on what is today the latest in science, they probably really didn't know much of anything and we really don't have to pay attention to them[416].

Imagine if someone told a reasonably well educated person today – who had nonethe-less never heard of a boomerang -- that one can throw a specially formed solid wooden stick full force that will travel out 100 feet or more and come back to the thrower. Most "well educated people" would be hard pressed to believe such a thing. If they were then told that this was something produced by a Stone Age people in Australia that did not even have a system a writing, the "well educated people" might think it was almost certainly nonsense.

We know that it's not nonsense. Boomerangs really work. They really can be thrown full force, travel out 100 feet or more and come back to the point they're thrown from. They really were discovered and used by Stone Age people in Australia who had no writing system. Across many generations and without a writing system, these people transmitted traditions of how to make returning boomerangs[417]. If we didn't study the workings of an actual boomerang and tried to make one without following the directions of the inventors very carefully, it's likely that our efforts would fail. Our boomerangs wouldn't come back.

Similarly, if we imagined that we understood what our sages were talking about when they wrote the rules for keeping Shabbes[418] – but we had never actually studied in depth what they really said [Shem.20:8-11, 35:1-4; see footnote 222, Deut 12:15] – or if we had never put into practice what they prescribed – we would be in the same position as the failed boomerang maker. Our Shabbes wouldn't work. It would not connect us across time and space to the tsadikim among our people who kept Shabbes in the prescribed way. We would not experience what they experienced. We would not come back to the opportunities at every turn for attachment to God. We would not even know that such attachments could have or had ever existed.

II Who are the people in Australia who gave us the boomerang and how does the boomerang work? This could be a gateway to **Aerodynamics and Anthropology.**

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[415] From #64, p49, Sefer Chid. Torah. This was conceived in Jerusalem, Israel in the summer of 5758 and said for the first time to one of Shoshanna's girl friends. The skeptical scientist was at JCT.

[416] For an example of what our rabbis of the Talmud did know – more than a thousand years in advance of the greatest experts of their time – see, in this sefer: THE QUESTION OF BLOODLETTING.

[417] For information on the history of boomerangs among the indigenous people of Australia and their design and use, see http://www.boomerang.org.au/articles/article-what-is-a-boomerang.html

[418] See in this sefer **Thanksgiving and The Six Days** – including the 39 forms of forbidden "work".

BOWING SEVEN TIMES -- BUT NOT EIGHT[419]

There is a famous passage in Vayishlach where Yaakov Avinu (Jacob) bows down to the earth seven times as he approaches his brother Esau:

וְהוּא, עָבַר לִפְנֵיהֶם; וַיִּשְׁתַּחוּ אַרְצָה שֶׁבַע פְּעָמִים, עַד-גִּשְׁתּוֹ עַד-אָחִיו.

And he himself passed over before them, and bowed himself to the ground seven times, until he came near to his brother. **[GEN 33:3]**

This is immediately followed, in the next verse, by:

וַיָּרָץ עֵשָׂו לִקְרָאתוֹ וַיְחַבְּקֵהוּ, וַיִּפֹּל עַל-צַוָּארָו וַיִּשָּׁקֵהוּ; וַיִּבְכּוּ.

And Esau ran to meet him, and embraced him, and fell on his neck, and kissed him; and they wept.
[GEN 33:4]

In the Torah, the word וַיִּשָּׁקֵהוּ - 'and kissed him' -has dots over each letter, signifying something very unusual. R. Shimon bar Yochai[420] says these dots point to the unusual sincerity of the kiss - even though, as he says in introducing this explanation:

הלכה בידוע עשו שונא ליעקב

***'The Law is known that Esau hates Yaakov'*[421]**

Esau here was moved by Yaakov's gifts and prostrations and kissed his brother with genuine feeling. Others disagree[422].

A key to understanding this scene is the way Yaakov Avinu bowed down. It will explain what Yaakov and Esau were each thinking as they embraced and wept. Why did Yaakov bow down seven times and not some other number? Some say that seven here is only another way of saying many.[423] Others say it's based on the verse:

כִּי שֶׁבַע, יִפּוֹל צַדִּיק וָקָם וּרְשָׁעִים יִכָּשְׁלוּ בְרָעָה.

For a righteous man falleth seven times, and riseth up again, but the wicked stumble under adversity.
[PROVERBS 24:16]

But why does it say seven here, and not some other number? Seven both here and in our verse with Yaakov, represents the natural world. Yaakov stops at seven – giving Esau special respect in the world that Esau understands. By bowing seven times – and not eight – Yaakov says that the bris of Avroham Avinu – represented by eight – belongs to Yaakov.[424] The kiss and tears come from a deep sense by both that this is the way that's best for all.

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[419] #56, p173-5 said in Yiddish at Shabbes sheva brochas of Hendi (Shapira) & Avroham Yesheya Kleiner in Bne Braq. [Hendi is Netziv's great-great-great-granddaughter. See: "קונטרס שאר ישראל", Naftali Zvi Yehuda Berlin[1887] on אנטיסעמיטים - anti-Semitism.

[420] (c.100-160 CE) Mishnaic sage & mystic, student of R. Akiba, traditional author of the Zohar & ardent opponent of Rome – symbol of Edom-Esau in his time. His Yahrtseit is Lag B'Omer.

[421] From Shimon bar Yochai, Sifre – Bamidbar: סט פיסקא p65, line 1- 2, תרעז, הורביץ שאול חיים 'רב דבי ספרי' _____

[422] R. Yannai, an Amora [~100 yrs later] in Bireshis Rabbah, ch. 78 ____] answers R. Shimon, saying Esau's intention was to bite Yaakov [וישפהו 'and bit him' sounds the same & is only 1 letter different from וישקהו] but Yaakov's neck turned to marble, blunting his teeth. Yaakov cried because of the pain in his marbleized neck & Esau cried because of the pain in his teeth. [However, it's uncharacteristic that either would cry from physical pain – particularly in front of each other. We also have the examples of R. Akiva, (Shimon bar Yochai's teacher), Rabbi Yishmael the Cohen Gadol & other martyrs – who didn't cry from physical pain even when tortured to death. [see: אלה אזכרה Eleh Ezkera, The Midrash Of The Ten Martyrs Transl. by *R. David Sedley*, '08 _____] But, if it's primarily an issue of a one letter difference, why not put the dot only over than letter? So, this 'pshat' may be intended to humorously & indirectly affirm Rabbi Shimon bar Yochai's understanding. R. Samson Raphael Hirsch agrees the tears were genuine.]

[423] Midrash, R. Chanina , R. Bachya

[424] A. One might also say that Yaakov is actually standing 8 times – counting the time before he starts to bow. Yaakov understands that, though he may fall repeatedly in the material world, he will always rise again -- as long as he remains upright in the world of the bris of Avroham Avinu. [Added 11 Kislev, 5772. Thought of after saying part of the original piece to a businessman at Chabad of Midtown, NYC.]

B. See also Proverbs 16:7: "When a man's ways please Hashem, even his enemies will be at peace with him."
בְּרֹצוֹת יְהוָה, דַּרְכֵי-אִישׁ; גַּם-אוֹיְבָיו, יַשְׁלִם אִתּוֹ.

C. See also: Talmud Shab. 89a
דרב חסדא ורבה ברי' דרב הונא דאמרי תרווייהו מאי הר סיני הר שירדה שנאה <לעכו"ם> {לאומות העולם} עליו

"For R. Hisda and Rabbah the son of R. Huna both said, What is [the meaning of] Mount Sinai? The mountain whereon there descended hostility [sin'ah] toward idolaters." [Some say that it also means *'the idolaters began to hate us'.*] The expression in { } *'nations of the world'* doesn't say 'all other nations of the world' or 'forever'. Unlike today, all of the nations at that time were involved in idolatry.

D. I asked R. Reuven Shapira of Bne Braq about this – Motze Shabbes Vayetze, 5776, in the home of his oldest son Zev in Kiryat Sefer. He said 'Esau hates Yaakov' didn't apply to all nations at the time – only to Esau & his heirs. Since then, Sennacherib mixed up the people in the area. In our day, those who act like Esau can be considered Esau d'Rabonin. For the related issue of 'a lamb among 70 wolves', see footnote 68 B-- on the link with the 'lamb' in Akedus Yitschok.

E. When we expect others of hating us, we'll have a more negative attitude toward them – which they will reciprocate – generating a spiral of enmity. Judging others favorably creates a spiral of amity. See in this sefer: I. JUDGING PEOPLE FAVORABLY: ANTIDOTE TO BASELESS HATRED, II. THE FOUNDATIONS OF THE WORLD. See also "The Lion was a shivering" in sefer A SIGN FOREVER.

PHOTOGRAPHIC MEMORY

Π GATEWAY TO EDUCATION, MEMORY AND PHOTOGRAPHY

There is a well known account in the Gemara in Niddah, daf 30b, that describes the experiences of a child in the womb. It says:

ואין לך ימים שאדם שרוי בטובה יותר מאותן הימים

"…there is no time in which a man enjoys greater happiness than in those days."

We also learn there that the as yet unborn child:

ומלמדין אותו כל התורה כולה

"…is also taught all the entire Torah"

and that :

וכיון שבא לאויר העולם בא מלאך וסטרו על פיו ומשכחו כל התורה כולה

"As soon as it emerges into the air of the world, an angel approaches, strikes it on its mouth and causes it to forget all the Torah completely."

It may appear at first, that this is very wasteful – except for the beautiful experience of learning Torah in the womb, undisturbed by material needs. Wouldn't it be better if we had this beautiful experience of learning Torah and then kept that learning with us to help us in the world after we are born? It would be better – and that's the way it really is. The Gemara doesn't say that the Torah that we learn before we are born is erased. It says that it is caused to be forgotten. Things that are forgotten can still be remembered at a later time. When we read that the Chief Butler forgot Yoseph, we read soon thereafter that he remembered him and the whole story in great detail two years later[425].

The process of "learning in the womb" as the *Eitz Yoseph* points out, actually helps us in the world of the born as we only have to remember what we have already learned – instead of having to learn from scratch.[426]

The process may be compared to photography. The sensitive film is exposed to an image in an otherwise dark chamber. Then the exposure stops. The image remains latent, invisible to human eyes. Only when the film is removed from its chamber and exposed to the very special development process, will the image appear. Each type of film has its own chemistry. Each type of film requires its own special set of chemical treatments to develop its images. If the film is treated with the wrong development chemicals and processes, the image will not come out the best – or may not come out at all.

So the 'film' of our soul is exposed to Torah in the womb. When developed in the proper chemistry of a Torah Home, a Torah Yeshiva, a Torah City, it will form a durable picture that will be clear to all and resistant to further exposure. Unlike ordinary film exposed in a camera, the soul exposed to Torah before birth is not as susceptible to "double or bleaching exposure". The latent image from Hashem only awaits the proper chinuch (education) that can wash away the exposures to ordinary imprinting and bring out the Torah image latent in our souls. [427]

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[425] Gen 40:23 and Gen 41: 9-13

[426] Cited by Artscroll, Schottenstein Edition of Tractate Niddah, 1st ed., 1st imp. ,' 96, p. 30b[4].

[427] A version of this was said by the author for the first time at Sheva Brochas for Shlomo Shleifer, a fellow student in Yeshiva Marbeh Torah in Bne Braq, ~5757. #47, p133, Sefer Chidushei Torah.

THE POINT OF REPENTANCE[428]

II GATEWAY TO SEWING AND SIMPLE MACHINES

There is a well known midrash about תשובה -- repentence[429] -- that is given in an authoritative translation as:

"The Holy One, blessed be He, said to Israel: 'My sons present to me an opening of repentance no bigger than the eye of a needle and I will widen it to openings through which wagons and carriages can pass"[430]

The difficulty is that the actual Hebrew text doesn't say: *"no bigger than the eye of a needle."*[431] It says:

"בני פתחו לי פתח אחד של תשובה כחודה של מחט
ואני פותח לכם פתחים שיהיו עגלות וקרוניות נכנסות בו"[432]

…a single opening… like the point of a needle…[433]

The key point of the midrash is lost when the translation makes the mistake of emphasizing the size of the opening and not its fundamental nature. "The point of a needle" is not merely a byword for something very small – the tip is perhaps 1/100th the size of the same needle's eye[434]. It's actually a force concentrator and multiplier – a type of simple machine – a conical wedge. It pushes laterally with ~10X the force that's applied to its axis. It's a system for making a small opening and widening it a hundred-fold with ordinary effort. The point of a needle, though minute, is strong, enduring and works beautifully at widening what it starts.

When we take even a small step in the direction of repentance, Hashem will open the way for us – provided our small step is well formed and sincere – able to accomplish in the world of ruchnius – of spirituality – what it was intended to do. Lighting Shabbes candles, avoiding a single form of forbidden work on Shabbes or seeking forgiveness from someone we've wronged are the kinds of seemingly small but well formed mitzvah's that can be the starting point on the path to complete repentance.

How does a conical wedge concentrate and multiply force? What is force?

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[428] **Originally #91, p115, in notebook Sefer Chidushei Torah – based on "eye of a needle."**

[429] **Deu 30:8,** … וְאַתָּה תָּשׁוּב And thou shalt return…; **Isa 55:7** יַעֲזֹב רָשָׁע דַּרְכּוֹ, וְאִישׁ אָוֶן מַחְשְׁבֹתָיו; וְיָשֹׁב אֶל-יְהוָה וִירַחֲמֵהוּ … Let the wicked forsake his way, and the man of iniquity his thoughts; and let him return unto the Lord, and He will have compassion upon him…

[430] **On the words "פְּתַחִי-לִי - open for me" in Song of Songs, verse 5:2, page 232 in Midrash Rabbah. Song of Songs. Translated by Maurice Simon, M.A. The Soncino Press, 3rd Edition, '83. Another well regarded publisher of sforim for the shomer mitzvahs community has a similar translation of the key phrase we will be focusing on:** "no bigger than the eye of a needle" **p147 of Shir haShirim/Song of Songs/ An allegorical translation based upon Rashi with a commentary anthologized from Talmudic , midrashic & rabbinic sources. By R. Meir Zlotowitz & Rabbi Nosson Scherman. Mesorah Publications, Ltd.Co.'77, '78,'79.**

[431] **A similar phrase in Pesikta de-Rav Kahana, Parsha HaChodesh, has, in some versions כחורה / ר instead of a dalet ד, making the meaning "hole", not point. Critical text & comment., S. Buber, p. מ ו , note פ א , 1868, _____ See also : "כחררה של מחט" "the hole of a needle" in _____ & Chabad, _____ citing: פסיקתא רבתי פט ,ו. ועוד.**

[432] **Hebrew text from:** שיר השירים רבה ה, ג) .) http://www.yeshiva.org.il/midrash/shiur.asp?id=3789

[433] **Author's translation, based on חודה p 435 in: "A Dictionary of Jewish Babylonian Aramaic of Talmudic and Geonic Periods" M. Sokoloff, Bar Ilan U. Press, Israel & Johns Hopkins U. Press, Baltimore and London, '02, & p. 430 in " A Dictionary of the Targumim, the Talmud Babli and Yerushalmi and the Midrashic Literature" M. Jastrow, Putnam's Sons, NY 1903. This trans. of חודה as "point", not eye, occurs many times on the internet at Chabad & yeshiva oriented websties. See also Shab. 104a on the opening in the ק--kuf-- & Menachos 29b on the shape of the ה -- he– both made with well formed openings to facilitate repentance.**

[434] **Sewing needles 2,000 years ago in the Roman Empire were similar in appearance -- but not in material -- to those we have today: *"…needles of various sizes in bronze and iron look more or less the same as modern needles, possessing a groove above and below the eye."* "The Magdalensberg textile equipment, a preliminary assessment" Kordula Gostencnik, p10-12 of _____**

Above is the point and eye of a needle from Roman times, found at: Taken from two different pictures. In modern hand sewing needles – sharps- the point is typically ~1/10th the diam. of the shaft – with shafts in a typical packet ranging from .35-1.17mm.

SODOM ON THE HUDSON

Almost anyone reading this title could easily think that it might be about the פריצות -- pritzus --[435] that is so widespread in New York City and other great cosmopolitan cities of the world. When most people think of Sodom, they think of pritzus. Yet in Perkei Avos, the only mention of Sodom comes from a completely different aspect of life in that infamous city. In Mishnah 5.10, we have

אַרְבַּע מִדּוֹת בָּאָדָם. הָאוֹמֵר שֶׁלִּי שֶׁלִּךְ וְשֶׁלְּךָ שֶׁלָּךְ, זוֹ מִדָּה בֵּינוֹנִית. וְיֵשׁ אוֹמְרִים, זוֹ מִדַּת סְדוֹם. שֶׁלִּי שֶׁלָּךְ וְשֶׁלְּךָ שֶׁלִּי, עַם הָאָרֶץ. שֶׁלִּי שֶׁלָּךְ וְשֶׁלְּךָ שֶׁלָּךְ, חָסִיד. שֶׁלִּי שֶׁלִּי וְשֶׁלְּךָ שֶׁלִּי, רָשָׁע:

…One who says "What is mine is mine, and what is yours is yours" -- this is a median characteristic; others say that this is the character of a Sodomite…

The Sodomites institutionalized this and made kindness to strangers – to non Sodomites -- a capital offense[436]. Even among Sodomites, if they had something of value to others that was of little value to themselves, they wouldn't share it or offer it at a low price. They'd try to charge "what the market will bear" – or they wouldn't offer it to others at all. A person who acts this way is said to be acting with *midos S'dom* – with the personality characteristics of a Sodomite.

A common example of this in New York City might be someone full of energy who's riding on the subway and doesn't really need to sit down. Nonetheless, they find a seat and take it. Along comes someone carrying bundles, or clearly tired or trying to read a book. The person with midos S'dom doesn't get up to offer their seat. "What is mine is mine, and what is yours is yours" **they say – to themselves – and they stay seated.[437]**

This seems bad enough – but it's a personal action, not a law of the community -- as it was in Sodom. However, New York City and many of the cities of the developed world have institutionalized midos S'dom in a very closely related area of public life. If someone is driving their own car, for example, and has four or five empty seats, the cost to the driver of filling one or more of those seats with people going in the same direction could be very low. The benefits to these potential passengers could be substantial– somewhere between the bus and cab fare for the same ride. Yet the law in New York City[438] -- and many if not most of the cities of the developed world -- prohibits private car drivers from picking up hitchhikers or charging strangers a modest fare to defray

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[435] פריצות -- Pritzus is a general term for "braking the bounds" of Torah-established normal human relations in the areas of modesty and intimacy.

[436] See, in this sefer:

"HOW DID THE GENERATION OF THE MABUL – FLOOD - GET SO BAD? AND HOW DID THE PEOPLE OF S'DOM GET SO BAD SO QUICKLY?"

[437] See in this sefer: **MIDOS ON THE METRO** or: **SUBWAY LOVE AND THE EXPANSION OF SPACE-TIME**

[438] ***Rules of the City of New York, Title 34, Department of Transportation, Chapt. 4: Traffic Rules and Regulations: §4-04 Pedestrians. (e) Hitch-hiking and soliciting prohibited.*** **(2)** ***Soliciting rides.*** **"***No person shall solicit a ride from the occupant of a vehicle by word or gesture.***"** http://24.97.137.100/nyc/rcny/entered.htm **Notice from the New York State Thruway –** ***"Do not pick up hitchhikers. Both hitchhikers and motorists picking them up are subject to arrest, as New York State law prohibits hitchhiking."*** http://www.thruway.ny.gov/about/factbook/index.html

the marginal costs of driving them[439]. In most cities – including NYC – the law actually is worse than midos S'dom. Even if a person wanted to charge full market value for their empty car seat, it is illegal[440]. The result is that roughly 70% of all private passenger car seats on the road are empty. The streets are over congested, traffic is slow, pollution is high and resources are squandered[441].

If, in this area of public life, we encouraged people to practice *midos chassidus* – the character of the pious and kind -- and annulled programs that encourage them to act the opposite way, we'd see enormous benefits for all[442]. We would also see a remarkable transformation of our transportation system. A.R.T -- Auto Rapid Transit -- would proliferate[443]. This is where private auto drivers -- on their way to work or school, the mall or other private trips -- pick up passengers along their route who are going the same way. They may carry them free or at marginal cost -- *midos chassidus* – or they may charge them full market value. Even full market value would be a form of chesed compared with the current system that prohibits this sort of service altogether.

The actual full market value price at any given time would also depend on the availability of ART services at the *midos chassidus* rate. It would be difficult to charge a high rate if someone with a nice car and *midos chassidus* will be coming along in a few minutes. The people with *midos chassidus* who pick up passengers under these conditions, would not only be doing a chesed for the passengers they are actually carrying. They would also be helping to lower the price for those who are picked up by drivers who are more interested in making money.

Of course, once a *midos chassidus* driver has picked up a passenger, they'd have further opportunities to do other acts of kindness – like dropping the rider off closer to their destination. Just driving safely and engaging in thoughtful, respectful conversation would add to the presence of kindness in the world and bring people closer to God.[444]

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[439] **The marginal costs include the additional insurance that might be needed to defray the higher costs of accidents with additional passengers or possible crime associated with picking up strangers. It would also include the slightly higher use of gasoline & vehicle wear, the small loss of time to the driver & the loss of privacy. GPS enabled cell phone based information systems could help link drivers & passengers – & also help both gauge the safety of the prospective ride. Part of this could be paid for by advertising. Some people though, consider having a stranger in the car more interesting than driving alone – more than offsetting these marginal costs.**

[440] **It's close to City Government saying:** "What is mine is mine, and what is yours is mine**". This, in the language of the same Mishna 5.10 in Perkei Avos, is the character of the wicked.** **See footnote 562-A**

[441] **Such "anti-jitney" laws are the result of legislation initially intended to protect the monopoly interests of the now defunct streetcars.** **See, in this sefer: "Justice, Justice..." Public Transportation and the Taliban..."**

[442] **See also in the author's sefer: ובלכתך בדרך, the chapter: "Public & Private Transportation & The Shape Of Cities" p2-45, including "The Montgomery Bus Protest" & "Auto Rapid Transit", p30-39 & KiruVans™**

[443] **The first use of the acronym, ART, in this context, is William W. Mann, Metro. Wash. (DC) Council of Gov., "Auto Rapid Transit: An Aid to Commuters and the Environment" Traffic Engineering, v.44, #8 p6-11, My,' 74. Traffic Engineering became ITE Journl. For abstract, see:** http://www.issinet.com/bin/webdbc.dll/traffic/users/htx/&/ite/journal/results.htx

[444] **Hitchhiking & ART are common in Israel. There are *trampiatas* on the highways to make it easier. There are also sherut services – jitney vans – where a fare is charged and passed to the driver through the hands of other riders. This is also true in marshrutkas - the Jitneys of the FSU-- and dollar vans in Brooklyn. The underscored words were added when I thought of 'kiruv in the car' after a discussion of kiruv in LA, on 10/21/12. A few days later, I thought of the Kiruvan™ [like Caravan, from the Persian كاروان]– a group of jitney vans running on a route & including opportunities to learn Torah and do mitsvah's – like saying brochas on food. Later, I thought of kiruvans providing kiruv in '70 languages" –not just for Torah -- so "free speech becomes a central feature at the outset of the Jitney/ART program. On 12/18'12, I thought of "kindness cars™" – any car offering ART service at below market rate – this would be most ART cars as a result of the influence of Midos Chasidus Drivers. *Kiruvans* and *kindness cars* would be difficult to attack politically & wouldn't require a large investment.**

CRITICAL TENTHS AND BETTER HALVES

II GATEWAY TO COMBINATORICS

There are many contexts in Jewish Life that call for a minyan - an assembly of ten mentally competent adult Jewish men.[445] Often enough – or too often – there aren't enough to make a minyan and people ask why women or children – or those who are not Jewish – can't be included. It seems unfair. Some would say it's discriminatory – against women, against children or even against adults who don't have the requisite minimum level of mental competence. It also seems wasteful. Without the ten men, we can't say certain prayers and the eight or nine men who have assembled may be left disappointed.

One way to look at this issue is from the perspective of critical mass. This is where a small and seemingly insignificant change in the mass or number of something makes an obvious qualitative difference in the result.[446] So what's the big difference between nine and ten in a minyan? One big difference between nine and ten turns out to be closely related to the issue of counting women. When we have a community with ten mentally competent adult Jewish men we will usually have a comparable number of mentally competent adult Jewish women as well. There will thus be twice as many mentally competent adult Jews in such a minimum size Jewish community as there would be in a minimum size community where men and women counted equally in a minyan.

The number of possible ways these twenty adults can be matched up is quite revealing. If we imagine, for example, that the adult Jewish men and women were not married at the time they arrived in the community and we had to pair them off, the total number of possible combinations of pairs would be enormous. The first person would have ten "better halves" to choose from. The next person could choose from the nine left, etc. The total number of combinations would be 10 × 9 × 8 × 7 × 6 × 5 × 4 × 3 ×2 × 1 = 10! (read as "ten factorial") or 3,628,800. This is exactly ten times the number of possible combinations we'd have if there were only nine couples.

'Ten' in the language of Torah represents both strength and completeness. We say that God created the world with ten statements [447-1], that there were ten generations from Adam to Noah[447-1] and ten more from Noah to Abraham[447-1]. Abraham assumed Sodom and its four sister cities would be saved by a total of ten righteous people in their midst[447-2]. Rivka watered ten camels[447-3]. There were ten plagues in Egypt[447-4]. There were the עֲשֶׂרֶת הַדְּבָרִים – the Ten Commandments -- at [447-5] and as already noted, the ten spies were called a congregation[447-6].

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[445] Talmud Bavli (Megillah 23b) derives a ***minyan*** of ten from:

… וְנִקְדַּשְׁתִּי, בְּתוֹךְ בְּנֵי יִשְׂרָאֵל … *"…**sanctified** in the **midst** of the children of Israel."* **Lev. 22:32**;

… מִתּוֹךְ הָעֵדָה הַזֹּאת … *"…the **midst** of the **congregation**"* **Num. 16:21**;

… לָעֵדָה הָרָעָה הַזֹּאת, אֲשֶׁר הֵמָּה מַלִּינִים, עָלָי … *"…this evil **congregation** which murmur against me?"* **Num. 14:27**

– where the latter expression refers to the ten spies.

Talmud Yerush. (Megillah 4:4) uses two different approaches to arrive at the same result:

1. … דַּבֵּר אֶל-כָּל-עֲדַת בְּנֵי-יִשְׂרָאֵל, וְאָמַרְתָּ אֲלֵהֶם--קְדֹשִׁים תִּהְיוּ *"… **congregation**…: **You shall be holy**"* **Lev. 19:2;**
2. … וְנִקְדַּשְׁתִּי, בְּתוֹךְ בְּנֵי יִשְׂרָאֵל … *"… **sanctified** …**children of Israel**"* **Lev. 22:32;**

… וַיָּבֹאוּ בְּנֵי יִשְׂרָאֵל, לִשְׁבֹּר *"And the **children of Israel** came to buy…"* **Gen. 42:5**,

where "children of Israel" refers to the ten adult sons of Yaakov. (Taken from Wikipedia, Erev *Rosh Hashanah, 5770)*

[446] Such effects are common in the material world ranging from water freezing to atomic bombs to black holes. See also, in this sefer: **JUDGING PEOPLE FAVORABLY: ANTIDOTE TO BASELESS HATRED II GATEWAY TO STATISTICS**

[447] 1. These are from Perkei Avos, 5.1-2; 2. Gen 18:32; 3. Gen 24:10-22; 4. Ex 7:14 -12:36 [blood, frogs, lice, wildbeasts, 'dever', boils, hail, locusts, darkness and death of firstborn]; 5. Ex 34:28, Deut 4:13, Deut 10:4; 6. Num. 14:27

Ten is the first and only number where adding one to the previous number increases the total number of combinations of couples by a factor of ten. It shows the critical importance of each one and the strength, completeness and critical mass of the combination.

If all men were the same and all women were the same[448], this increase in the number of combinations of married couples would be almost meaningless. The reality is that people are quite different in many ways. With more choices, each person will be better able to find someone that is closer to their ideal and the community as a whole will be stronger for having more people better matched.

As great as the differences are among men and among women, the differences between men and women are even greater. Yet the original Adam – the first Human – created in the Image of God – was neither man nor woman. The original Human was –the Midrash says– both.[449] Though the increase in combinations when we go from nine to ten is "great, complete and critical," when we go from one hermaphrodite to two separate "halves" – a man and a woman – we change the basic nature of the world.

Creating two separate, different but rejoinable halves from the single hermaphroditic Adam gave the two halves perspectives about the world and about each other that they couldn't have while physically joined together[450]. The Woman was created as עֵזֶר כְּנֶגְדּוֹ [451]– to help the Man – her husband -- in doing good and to oppose him if he should aim to do otherwise. Just as we learn from ותלמוד תורה כנגד כולם -- that *Torah Study supports and balances them all*[452] - so a woman isn't her husband's simple servant. She's his support and balance. They balance and support each other -- from their different stances and perspectives.

The two together are in turn balanced and supported by God – each containing a piece of His name י and ה and uniting His name when they support, balance and unite with each other[453]. The Man, the Woman and God form a tripod -- a strong, stable structure with a sheltering space within. It is a space for children to be created and grow and for guests to learn. It is a space within which kindness can be nurtured in all its dimensions; an ohel – a tent -- from which the *Derech Hashem* can be brought out to fill and transform the world.

See also, in this sefer: **THE FOUNDATIONS OF THE WORLD**

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[448] See, in this sefer, **"Fill the Earth II Gateway to Nature - Nurture Questions"**

[449] **Midrash Rabbah, Genesis 8.1** ***"R Jeremiah b. Leazar said: When the Holy One, blessed be He, created Adam, He created him an hermaphrodite....R. Samuel b Nachman said : When the Lord created Adam He created him double faced, then he split him and made him of two backs, one back on this sided and one back on the other side."*** **Translated by Rabbi H. Freedman, the Soncino Press 1983.**

[450] **[from #101] A single uniform piece of polarizing material has only one appearance in ambient light. When cut in 2 & rejoined at varying angles the whole range from clear to opaque can be made. Said & demonstrated in Yerushalayim at the Shabbes Sheva Brochos of Menachem Foyfer. I was asked by R. Reuven Shapira to say a dvar Torah where the Chassen spoke no English, the Calleh spoke no Yiddish, most of the children spoke neither & I couldn't speak Hebrew.**

[451] **Gen 2:18** …'It is not good that the man should be alone; I will make him a help meet for him.'

[452] **Mishnah Peah 1.1 , where "them" refers to:** כיבוד אב ואם, וגמילות חסדים, והבאת שלום בין אדם לחברו
"honoring father and mother, self perpetuating acts of kindness and bringing peace between man and his fellow." **Emphasis added:** see in this sefer: **Gemilus Chasadim – "Camel Kindness" II Gateway to Life Sciences and Sustainable Living**

[453] **In Hebrew, 'man' אִישׁ has a י and 'woman' אִשָּׁה has a ה . These two letters spell one of the names of God.**

GOD'S JOY, LOST FRIENDS AND CHANUKAH[454]

My mother Henya Chava, Z"L, used to say in the name of her father - my grandfather - Chaim, Z"TsL: וועֶן פֿרייִדט זיך אַן אָרעמאַן? וועֶן ער פֿאַרלירט אוֹן געפֿינט.[455]

When is a poor man delighted? When he loses something and finds it again.

This doesn't only apply to things. It applies also to people. Sometimes, for example, we might seem to have lost a friend -- or even a child -- as a result of misunderstanding or other mistakes[456]. Just as it's a mitzvah to return a lost object that HaShem has given us the opportunity to find[457], so also is it a mitzvah to return a lost friend or child. If HaShem has put us in a place to "find" someone's lost friend or child – to understand how they became lost and what needs to be done to return them to each other -- so we are obligated to make the effort to return friend to friend and children to parents. We should not hide ourselves from the mitzvah – even if one or both of those who need to be reunited are among those who we think hate us or are our enemies[458]. Returning the friends and children in this case will not only add joy to the friends and families but will erase any enmity -- real or imagined – between all those involved. Perhaps this is why we are reminded every morning that honoring parents and restoring peace between friends are among those things that give a reward both in this world and in the world to come.[459]

All too often, the friends that are lost to each other aren't ordinary friends. The friends are God and Man. Here the simcha that we experience on finding what we've lost gives us a sense of what it means to God when we return to Him. Even more, when what we've lost is the Derech Hashem and we experience the joy of finding it again. It's a double joy –God's and ours – and is part of the Joy of Chanukah – a rededication to the path of Dvakus[460A] --when the Poor Man in the Midbar [460B] – The Jewish People --feels "The Joy of God".

The פֿרייליכע -*joyous*- eight days of Chanukah are usually thought of being -- like other 8's in Torah -- beyond the natural world -- where the natural world is represented by 7 [460-C]. So 8 is the spiritual world -- the world represented by the covenant of Avroham Avinu[461]. Chanukah adds another dimension to that understanding of 8 in Torah. With its 8 days, it always starts and ends on the same day of the week. So it represents a second chance -- for starting over -- for finding what was lost -- but built on the experience of the first seven days -- of living in the natural world.

THE SIMCHA OF TSHUVAH

On Rosh HaShana, 5777, at Yeshiva Ohr Somayach in Jerusalem, I heard the Rosh Yeshiva, R. Nota Schiller, Shleeta, say that the distinguishing feature of שמחה-simcha is חידוש -'chidush'– something new[462]. So, what's the chidush everyone can experience in the period of Succoth & שְׁמִינִי עֲצֶרֶת Shmeni Atseres – both of which are called Zman Simchosenu – the season of our rejoicing?

The hint is in the name of the last of the tshuvah oriented Yom Tovim: שְׁמִינִי עֲצֶרֶת - Shmeni Atseres. The chidush comes from that experience of time going backwards – the 8th direction – of 2nd chances – like the 2nd luchos. It's finding what we've lost in the past in our service of God – rectifying our shortcomings & bringing our renewed, strengthened & perfected connections to God into our present & future. It's the simcha of a new found person with a new found דבקות - devakus – 'attachment' to God[463] – represented by the - סכך - schach – the symbolic interface between 'God-made'& 'Man-made' – between Heaven & Earth.[464]

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[454] #132. Conceived & written Chanukah, 5771, partly in letters to A.P. HaC., I.G. & R. Y.Levi . 1st said: table, R. Zevulon Charlop, Vayigash, 5771.

[455] I don't remember ever hearing my grandfather say this – but my mother said it often – when she saw that I had found something that I had lost. The Yiddish was typed out for me by Itzik Gottesman, Editor of the Yiddish Forward. The following is the transliteration I sent to him – as I remembered hearing it from my mother: "*Ven freitsich an ureman? Ven eer faleert und gefindt*." Also found in a quote from דער ליסער רב in the יודישער אצער 1937, p. שצג, #1491, pdf p. 10 of ___. The expression was in quotes & didn't originate with this source.

[456] One of the most moving stories of the return of 'lost' friends & children – & of real tshuvah -- is Yehudah's effort to return Shimon, Binyomin & ultimately Yoseph to Yaakov [GEN 44: 18-34, GEN 45:26-28, GEN 46: 29-30] & the return of Yoseph & his brothers to each other [GEN 45:1-15]. They include real tears of joy [Gen 42:24, 43:30; 45:2, 14, 15; 50:17] – like rain on The Land in its Season [Deut 11:10-17] -- the Joy of God. Most of these events are in Miketz & Vayigash -- parshas coincident with Chanukah. There's also Reuven's failed attempt to return Yoseph, 22 yrs before [GEN 37:22].

[457] Deut 22:1-3

[458] Exod. 23:4-5

[459] ואלו דברים שאדם אוכל מפירותיהן בעולם הזה, והקרן קיימת לו לעולם הבא- כיבוד אב ואם וגמילות חסדים והבאת שלום בין אדם לחברו ותלמוד תורה כנגד כולם "These are things the fruits of which a man enjoys in this world, while the principal remains for him in the World to Come:...honoring father and mother ...bringing peace between a man and his fellow..."SED. ZERAIM, PEAH: CH.1,MISH. 1

[460] A. Attachment to God B. The desert – where we received the Torah. C. The fixed stars are also the 8th level of heavenly bodies –& the most constant-visible with an unaided eye: sun, moon, mercury, venus, mars, jupiter, saturn, stars.

[461] Gen 17:4-27. See, in this sefer: **"Bowing Seven Times -- But Not Eight";** also, see footnote 315

[462] ? Prov 15:30 מְאוֹר-עֵינַיִם, יְשַׂמַּח-לֵב; שְׁמוּעָה טוֹבָה, תְּדַשֶּׁן-עָצֶם. -The light of the eyes rejoiceth the heart; and a good report maketh the bones fat'. "Metzudat David' מצודת דוד [R. David Altschuler, d.~1753] comments: מאור עינים: הארת עינים בדבר המסופק ישמח לב כי אין בעולם שמחה כהתרת הספקות. '...the world has no joy like the resolution of doubts' "שמועה טובה: בדבר חדושי התורה - 'A good report' is chidushei Torah."

[463] See: Gen 2:24, Dev 4:4, 10:20, 11:22, 13:4, 30:20, Josh 22:5, 23:8; 2 K 18:6; Ps 119:31; Jer 13:11

[464] Much of The Simcha of Tshuvah was thought of & said for the 1st time -- in Yiddish – in Yerushalayim, at the 5777, Leyl Shabbes, Chol HaMoed Succos table of R. Mordechai Brimm & Family [Yits. Sholal St.] , in presence & at request of his father-in-law, R. Yisroel Dov Biderman [#2 Chagiz St.], & ~10 'Brisk' Yeshiva students.

MILK AND HONEY[465]

II GATEWAY TO AGRICULTURE, ARBORICULTURE AND APIOLOGY – THE STUDY OF HONEYBEES

The most frequent description of the Land of Israel found in Chumash –the Five Books of Moses– is זָבַת חָלָב וּדְבָשׁ "flowing with milk and honey" This expression is found fourteen times in Chumash as a description of the Land of Israel and once as a description of the part of Mitzrayim – Egypt – that the Jewish people had left.[466] In the rest of the bible it's found five more times describing Eretz Yisroel. With all of this, it should be clear what we are to imagine when we read "flowing with milk and honey" in connection with Israel. But it isn't.

If we ask most educated religious Jews what this means, they will tell you that the honey mentioned here is not bee honey. It's honey from dates. Some will say that it's fruit honey – a mixture of honey from dates and figs – but that it doesn't include bee honey. Some will go further and say that when we read, in Genesis 43:11, that Yaakov Avinu sent מְעַט דְּבַשׁ "a little honey" as part of a present to the Viceroy of Egypt, that also wasn't bee honey. To fully extirpate bee honey from Chumash, some will add that where we read about דְּבַשׁ מִסֶּלַע "honey from a rock" in Deut. 32:13, even that isn't referring to bee honey: It's fruit honey or sweet water. Yet with bee honey seemingly eliminated from Chumash, all agree that bee honey is kosher[467] and that it is seen being eaten and praised as a food in other parts of Tenach.[468]

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[465] Conceived in Eikev, 5770. Researched after being told by R. Chaim S. that Sifre says that דבש isn't bee honey.

[466] Ex 3:8, 3:17, 13:5,[A] 33:3, Lev 20:24, Num 13:27, Num 14:8, [16:13,This ref. is to Egypt.], 16:14, Deu 6:3, 11:9, 26:9, 26:15, 27:3, 31:20. [& Josh. 5:6, Jer. 11:5, 32:22, Ez. 20:6, 20:15] The next most frequent description of the Land of Israel in Chumash -- occurring about a dozen times -- is a "good land". There are several variations on "good land" in the Hebrew. "good land" occurs five more times in the rest of Tenach. "Flowing with milk and honey" is always the same.

A. This is where Rashi first comments on the meaning of - דְּבַשׁ - *honey* - not on the 3 earler: Ex 3:8, Ex. 3:17 & Gen 4:3. He writes:

החלב זב מן העזים והדבש זב מן התמרים ומן התאנים
Milk flows from the goats; the honey flows from the dates and the figs.

[Emph. Added] Both ArtScroll's The Torah with Rashi's commentary translated, annotated, and elucidated, by Rab. Yisrael Herczeg & Chabad.org_____ show this as coming from Kethuboth 111b. However, as we'll see & discuss below, Kethuboth 111b doesn't mention dates.

[467] The Talmud discusses whether milk & bee honey are kosher [Bechoros 6a: milk; 7b: bee honey. There's a mention of the expression "land flowing with milk & honey" in support of milk being kosher – but this is at first rejected for milk because the milk may be sold – & that is the praise. The Gemara responds: "Now if milk were not permitted, would Scripture commend the country to us with something which is not fit to be eaten [by Jews]?" [Soncino transl. ___] The assumption is that the answer is "clearly not" [Schottenstein interpolation].

However, that milk is fit to be eaten was already proven in the Gemara just before [from 1 Sam 17:18: eating cheese -- & just after [from Is. 55:1: milk for consumption]. So, it's not necessary to prove it from "land flowing…" Also, the Land is actually praised with things that aren't fit to eat– including 3 of the 6 things in Yaakov's present of the praises of the land which we just saw at Gen 43:11 & in "…out of whose hills thou mayest dig copper."[Deut. 8:9]- tho' these aren't fit to eat by anyone, while bee honey is.

The proof that bee honey is kosher – at 7b – doesn't raise "a land flowing…" as a proof, perhaps because this expression may refer to fruit honey—&/or because the suggestion "it may be sold" wasn't really settled for milk. The proof that bee honey is kosher is learned instead from:

כֹּל שֶׁרֶץ הָעוֹף, הַהֹלֵךְ עַל-אַרְבַּע--שֶׁקֶץ הוּא, לָכֶם.
אַךְ אֶת-זֶה, תֹּאכְלוּ, מִכֹּל שֶׁרֶץ הָעוֹף, הַהֹלֵךְ עַל-אַרְבַּע: אֲשֶׁר-לֹא
(לוֹ) כְרָעַיִם מִמַּעַל לְרַגְלָיו, לְנַתֵּר בָּהֵן עַל-הָאָרֶץ.

"All winged swarming things that go upon all fours are a detestable thing unto you. Yet these may ye eat of all winged swarming things that go upon all fours, which have jointed legs above their feet, wherewith to leap upon the earth;" Lev 11:20-21

The Gemara learns, that this repetition of "winged swarming things that go on all fours" is to teach us that 'something" kosher comes out of these creatures that wasn't part of them – based on the potential double meaning of שֶׁרֶץ-- & that 'something' is bee honey. No additional psukim are brought [eg; See footnote 468]-- as is done in the case of milk -- to show bee honey actually being eaten.

With all this, "…Radvaz ([ש"ת #]962) [In some ed, 527] …suggests that devash in Tanach can refer to either date honey or bee's honey, while in rabbinic literature, it is always bee's honey." From: "Tzarich Iyun: Milk and Honey" Rabbi Dr. Ari Zivotofsky. _____ Radvaz: David Ben Solomon Ibn Abi Zimra (aka: רדב"ז RaDBaZ): Talmudist-cabalist; b.Spain~1479; d. Safed, 1589, age 110. [#962 has 127 דבש, 0 חלב ה סימן רכ . has זבת חלב ודבש 3X]

[468] A. Samson eats bee honey from lion's skeleton. Jud. 14:8-9; Yonasan eats b.h. I Sam. 14: 25-27; *sweeter also than honey and the honeycomb*. Ps 19:10; H out of a rock (tsur) Ps 81:17 [H bees in the desert often build hives in rock clefts. See p. 91 for comment on this in context of "Love thy neighbor"]; *My son, eat thou h, because [it's] good; and the honeycomb, [which is] sweet to thy taste*: Prov. 24:13; *Thy lips, O [my] spouse, drop [as] the honeycomb: h and milk [are] under thy tongue*; Sgs 4:11; *I have eaten my honeycomb with my honey*… Sgs 5:1.

B.. Honey is also noted at Sh. 16:31 '… Manna; and it was like coriander seed, white; and the taste of it was like wafers made with honey.' This could mean almost any kind of honey.

The complete elimination of bee honey from Chumash and from the praise of the Land of Israel isn't as well supported by primary sources as most think[469]. Before looking at these sources though, let's look more closely at some of what we may lose by cutting bee honey out of our praises of אֶרֶץ יִשְׂרָאֵל 'the Land of Israel.'

The best place to start is with the first mention of honey. This is where, as we've just noted, Yaakov Avinu includes מְעַט דְּבַשׁ *"a little honey"* as part of his present מִזִּמְרַת הָאָרֶץ *"from the praises of the Land."* [Gen. 43:11] The present is made up of six special products of the Land of Israel:

...מְעַט צֳרִי וּמְעַט דְּבַשׁ נְכֹאת וָלֹט בָּטְנִים וּשְׁקֵדִים.

...a little balm and a little honey, spicery and ladanum, pistachio nuts [470] and almonds[471].

None of these six – except possibly "a little honey" if it isn't bee honey – are included in the seven special kinds of food for which the Land of Israel will subsequently be praised. These seven are wheat, barley, grapes[C], figs[D], pomegranates[E], olives[A] and dates[B] [472].

Three of the six "praises of the Land" were already mentioned in Torah - נְכֹאת וּצְרִי וָלֹט - spicery and balm and ladanum**. Twenty two years before, merchants were bringing them through Dotham in Israel to sell in Egypt, over 200 miles – ten days' journey -- away.[473] Merchants wouldn't go through the trouble of bringing down to Egypt things the Egyptians already had. Pistachio nuts and almonds don't grow naturally in Egypt. To yield fruit, they both require moderately cool winters – found in much of Israel but not in Egypt.[474]**

That leaves "a little honey." Dates, figs and grapes grow in Egypt in great abundance and variety.[475] A little honey-like sweet fruit paste

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[469] An example of apparent elimination of bee honey from Ibn Ezra: Vayikra 2:11,*"Many people say that the "honey" referred to here is not bee honey but date honey, and they would argue that the same is true whenever the text refers to "a land flowing with milk and honey." They have support of a kind for this suggestion from the book of Ezra.* Ibn Ezra doesn't say here what he thinks. We'll be taking a closer look at Vayikra 2:11-12 later in this piece.

[470] **A.** Rashi writes on בָּטְנִים [botneem]"I don't know what they are. In the *Aleph Beis* of R' Machir I have seen בָּטְנִים defined as pistacias [sic] and it seems to me that they are peaches." The editor writes "The *Aleph Beis* of R' Machir is a dictionary of Scriptural and Talmudic words written by R' Machir ben Yehudah (Mainz, Germany, late 10th, early 11th century CE) brother of Rabbeinu Gershom Me'or HaGolah. It is no longer extant." The editor translates בָּטְנִים as pistachios. "Rashi: the Torah with Rashi's commentary, translated, annotated, and elucidated"Yisrael Isser Zvi Herczeg ; in collab. W. Yaakov Petroff and Yosef Kamenetzky; contrib. edit. Avie Gold. Mesorah Pub., '94

B.1 Suc.10a[line32]אפרסקין-afarsekin-(O.F.persches?)peaches (RASHI to Shab 22a). Correct girsa is apastekin - a type of nut (possibly Pistachio). As peaches are a summer fruit, they wouldn't be available on Sukos. Y. Feliks, Plant World of the Bible, Ramat Gan '68 ____**B.2** אפסטקין 'The fruits of the pistachio tree' p.106, Dictionary of Targumim, Talmud and Midrashic Lit., M Jastrow '26,citing:Y.Dem.II,beg. 22^{b}; Y.MaasrI,48^{d}_____איפסטקין Maasr. Ch 1,Hal,2 4b^{2}, Schott., '07 ____

C. One may think that peaches & almonds are very distant from each other but they are actually closely related & resemble each other as the fruits are growing. This similarity is noted in Kelayim, 1.4 "As for trees...the peach[הפרסקין] and the almond [והשקדין]...even though they are similar one to the other, yet constitute Kil'ayim one with the other."

D. "It is nothing unusual in California where almonds and peaches are growing in the same orchard, [that bees cross-pollinate both indiscriminately &] to have one third of the [peach] seedlings turn out to show marked characteristics of the almond; or, contrariwise, to find that a number of the almond seedlings show the characteristics of the peach."[Taking advantage of this, the author produced "a smooth-skinned peach, with white flesh, bearing at its core an almond nut." "The Almond—and Its Improvement —Can It Be Grown Inside of the Peach? Luther Burbank, [1849 -1926] V. 11, 1915, p74-5 ____

[471] My Grandmother, Chaya Rochel (Adler), Z"L, used to sing a Yiddish song she wrote about the land where 'almonds grow'- וואַקסן ענמאַנדל "mandlin vaxen" -- about her time before WWI as a young farmer in what is now Tel-Aviv.

[472] The order of preference, ceteris paribus is **A-E** - unless Gefen is grapejuice or wine, when it comes first. [Deut 8:8]

אֶרֶץ חִטָּה וּשְׂעֹרָה וְגֶפֶן וּתְאֵנָה וְרִמּוֹן אֶרֶץ-זֵית שֶׁמֶן וּדְבָשׁ

a land of wheat and barley, and vines and fig-trees and pomegranates; a land of olive-trees and 'honey'.

[473] Gen 37:25 "Apparently these were considered precious in Egypt where [they]...would be used medicinally, as incense and in embalming" Abarbanel, Malbim. [p. 1647 Bereishis V 5, R. Meir Zlotowitz, & R. Nosson Scherman, Mesorah Pub., '80] The location of Dotham in Israel and its location with respect to the Nile may be seen here: _____ This earlier sale did not take place in a time of famine, so it can't be said that they were just selling whatever they had on hand.

[474] "Pistachio trees require ...[~1k hours] of temperatures at 45 degrees F. or below bringing about the dormancy necessary for good production." ____"Almond trees need warm summers and cool winters...[& if it's] hot all year round, you will probably not be successful."

[475] **A.** Grapes suitable for Pharaoh were growing in Egypt, 11 years before – when the chief butler was restored to his position Gen 40:11. For those who say that זְבַת חָלָב וּדְבָשׁ is speaking of honey from dates or figs, the use of this expression to describe a part of Egypt that the Jewish people had recently left – at Num 16:13 – shows that Egypt had an abundance of such fruit in those times.

B. If we understand Num. 16:13, supra, to include bee honey, it means the Torah is saying b h was also well known to the Egyptians. [The remains of a large bee-keeping honey & beeswax production center using *horizontal, cylindrical hives* were found in Israel dating from ~3k yrs ago. "Industrial apiculture in the Jordan valley during Biblical times with Anatolian honey bees.", Guy Bloch, et al, Proc. of the National Academy of Science, USA, 6/22/'10, v. 107, #25, 11240–4; "*Scenes of beekeeping in Ancient Egyptian art date back...[over 4000 yrs...with a scene of a] beekeeper collecting honey from horizontal, cylindrical hives...."* Dr. Gene Kritsky, PhD, Prof. & Chair, Biology at Mt. St. Joseph U., Ed.-in-Chief of American Entomologist. _____

C. Honey mentioned in the account of 'the cry of Sodom' was apparently stored for use in their morally inverted judicial punishments. This

made of one or more of these - or a small box of the fruits themselves – wouldn't be something special to the viceroy of the wealthiest country in the world at the time. The dates of Jericho – "The City of Date Palms"[476] – might be very special in Eretz Yisroel and they might have a distinctive taste among the dates of Israel – but they would not be so remarkable to the Viceroy of Egypt.

What would be remarkable would be the wild bee honey of Yaakov Avinu's Land. Bee honey is essentially concentrated nectar of the flowers that the bees feed on.[477-A] The bees in Israel would feed on the flowers that grew in Israel – including many – like the almond blossom – that aren't found in Egypt. Just as almonds were a special treat for a wealthy Egyptian – both because of their distinctive, pleasant taste and because they're not found in Egypt-- so also honey with the taste of almond blossom nectar would be something delectable that would catch the attention of the Viceroy and help to win his favor. [477-B]

These three food items in Yaakov Avinu's present to the viceroy of Egypt of "the Praises of Israel" -- almonds, pistachios and bee honey -- have something remarkable in common. None of them are found among the seven foods which are used to characterize the "Good Land" which, as noted above, is:

אֶרֶץ חִטָּה וּשְׂעֹרָה, וְגֶפֶן וּתְאֵנָה וְרִמּוֹן; אֶרֶץ-זֵית שֶׁמֶן, וּדְבָשׁ.

….a land of oil olive, and dates.

The last word here -- דְּבָשׁ -- is actually identical to the word which, in Yaakov's present, we've translated as bee honey. Here it clearly isn't bee honey. According to our sages of the Talmud it means luscious dates – not bee honey, dates that are hard as stones, date exudates or jams.[478] This same verse is the

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may be the earliest mention of cultivated honey in our mesora. See footnote 29. Hunted honey is usually consumed when found.

D. Egypt today is one the world's top two producers of dates and figs --producing 40 – 150X as much as Israel _____ Pliny The Elder [23-79CE, rhymes with skinny] in his *Natural History* asserts: *pistacia*, "well known among us", was one of the trees unique to Syria. Egypt is ranked 13th in grapes. Israel ranks 18th in dates, 20th in almonds, 32nd in figs, See: "Aspects Related To Temperate Zone Fruit Production In Egypt" ____

[476] Deut. 34:3, 2Chron. 28:15

[477-A] "Nectar is carried back to the nest in the honey stomach…Enzymes… are added to the nectar [in the honey stomach]…[that] break down the sugars into simple inverted forms which … protect the honey from bacterial attack. The nectar is then evaporated [both on the bee's tongue in flight &] by fanning in the hive …[until] the water content is generally reduced to less than 18% to protect the nectar from yeasts." p.57, The Biology of the Honey Bee, Mark L. Winston, Harvard U. Press, 1987 & "Bees get a head start on honey production" Susan W Nicolson, Hannelie Human, Biol. Lett. (2008) 4, 299–301. ___

[477-B] The very high ratio of bees/flower in commercial orchards -- such as those of California -- & seasonal variations may affect the availability of nectar & the amount & taste of the honey. The hives of bees used for pollination in commercial orchards in California are usually trucked in and are already stocked with non-almond blossom honey before they arrive – supplying the bees with energy to do their work pollinating the flowers.

On the French Riviera – the S. of France – where the climate is similar to N. Israel, there are almond orchards that produce almond honey. I spoke with three religious Jews from France who said they'd tasted almond honey from this area & that it had a strong, good, distinctive & memorable taste. It's also produced in the center & south of the Iberian Peninsula –where there's no frost in Feb. & Mar. A Spanish website, hispamiel.com, says it's: *"Floral, clear, persistent and something with a strong fruity scent component; notes reminiscent of raw almonds. Sweet flavor, without other notes, sometimes with bitter notes."* _____ Almond honey is usually scarce: the blossoms appear before almost all other flowers – when it's still quite cold – & give nectar for only ~2 weeks. Bees use almost all of this winter honey for energy. They can't fly efficiently unless their body temp. is ~35°C. In winter, bees warm up by running their wings before flight. "How The Honey Bee Regulates Its Body Temperature", B. Heinrich, Bee World, Vol.77 (3) '96 p.130-7. Chazal, in Bireshis Rabbah, [91:11][cited by Radak]

– מעט דבש רבי יהודה בר רבי אמר דבש בריא כאבן

"a little honey: – honey as hard as stone"

noting that there was plenty of ordinary honey in Mitzrayim. This may be because מְעַט צְרִי comes just before it & resembles the words for hard or stone. However, most honey can be made "hard as stone" –so what was the honey from?

[478] Sifre on Deut 8:8: "*The olive is the storage olive, the honey is date honey*", 'Sifre. A Tannaitic Commentary on the Book of Deuteronomy', Translated from the Hebrew with introduction and notes by Reuven Hammer, Yale , '87. The fact that the Sifre has to say something here suggests that the ordinary meaning would be bee honey. Talmud Yerushalmi Bikurim 1:3 clauses I.M-P: of the Gemara "Honey [in Deut. 8:8] refers to dates. Perhaps it refers to actual honey (derived from bees)? R. Tanhuma in the name of R. Isaac b. R. Eleazar: 'It is written, "As soon as the command was spread abroad, the people of Israel gave in abundance the first fruits of grain, wine, oil, honey, (and of all the produce of

center of a Gemora in Brochos on how these same seven foods serve as a basis for several important measures in Torah Law. When the discussion arrives at the use of dates as a unit of measure, Rashi has a note that goes to the heart of the whole question. He says:

דבש. האמור בתורה הוא דבש תמרים וכותבת היא תמרה:

"The word דְּבָשׁ , *honey,* mentioned in the Torah refers to *date*-honey" [479].

This is understood by many to mean everywhere in Chumash where we see the word דבש we're to understand that the Torah isn't talking about bee honey – as we might think – but only date honey. However, we've already seen that Chazal are referring to dates themselves when they discuss the seven special foods in Dev. 8:8. Also, as we've noted above, Rashi, himself says, on Exod. 13:5:

זבת חלב ודבש: החלב זב מן העזים והדבש זב מן התמרים ומן התאנים:

"Milk flows from goats and honey from dates and figs."[480]

This is said to be based on a Gemora in Kesuvos 111b[481], where we find:

רמי בר יחזקאל איקלע לבני ברק חזנהו להנהו עיזי דקאכלן תותי תאיני וקנטיף דובשא מתאיני וחלבא טייף מנייהו ומיערב בהדי הדדי אמר היינו זבת חלב ודבש.

"Rami bar Yechezkel once paid a visit to Bene-B'rak [*near where the city of the same name is in Israel today*] where he saw goats grazing under fig-trees while honey was flowing from the figs, and milk ran from them[482], and these mingled with each other. 'This is indeed', he remarked, '[a land] flowing with milk and honey'."

This also is the likely source of a more abbreviated form of the same story in the Midrash on Shemos 3:8 -- the first place that אֶרֶץ זָבַת חָלָב וּדְבָשׁ …a land flowing with milk and honey… **appears in Chumash. [483]**

It is clear from the context in the Gemora in Kesuvos that the story of Rami bar Yechezkel – and the Midrash that is based on it – are not intended to show representative scenes in the Land of Israel. The story and its context show that the Land of Israel is so rich

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the field; and they brought in abundantly of the tithe of everything") (2 Chron. 31:5). Now is honey liable to tithes? (Certainly not.) The reference, then, is to dates, which are liable to tithes.' J. Neusner, V. 10, '91 p 135-6. Talmud Bavli has no Gemara for Bikurim. Mishna Bikurim 1:3 & 10, exclude 'mountain dates' because they're hard & aren't honey-like. Ref also to Men. 84ab (?)

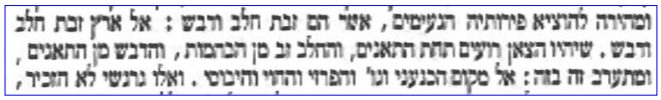
[479] *Berachos,* Schottenstein Ed., p. 41b[1], note 3, 1st ed. , 1st imp. '97. The Editors add "Here it refers to the date itself.", where "here" refers to the Gemara .

[480] See footnote 466 A. Copied from: http://www.chabad.org/library/bible_cdo/aid/9874/showrashi/true

[481] Hebrew & Aramaic text: http://www.mechon-mamre.org/b/l/l3213.htm ***Kesuvos,*** **English: Soncino Ed. at:** http://www.come-and-hear.com/kethuboth/kethuboth_111.html **. Words in brackets added by the author. Just after this, R. Yaakov ben Dostai says he walked ~2 miles from Lod to Ono (within ~10 miles of Bne Brak), ankle-deep in dvash of figs** בדבש של תאינים **with no mention of milk. On flat land, this is ~10X the annual fruit yield – 3kg/m² – that would be expected in Israel today. [Based on Spain, P 72, V. 2 , Production Practices and Quality Assessment of Food Crops , Edited by: Ramdane Dris, S. Mohan Jain, '04]**

[482] Milk might be expected to run from a goat's udders if it loses a kid near the peak of nursing. Where goats are roaming free, lions and other large carnivores will find plenty of food attacking baby goats – leaving quite a number of nursing goats with no baby – producing an abundance of leaking udders. High wind can knock down most of the fruit in an area – leaving the ground carpeted with fruit – attracting goats – incl. those who are leaking – etc.

[483] "Midrash L'kach Tov Hamichonah Psykta Zutrasa on Chumash" by Rabeinu Tuvia Bar Eliezer Z"L, printed in Jerusalem *tof shin chof* (1970), p.18 of Shemos, comments on 4th line from top (my translation): *"There were sheep (tson) pasturing under fig trees and the milk flowed from the animals and the dvash from the fig trees and they mixed one with the other."*



[The facs. of Hebrew text here can be improved for publication. See under bee's honey in flash drive with this Sefer Chidushei Torah.] Rashi has no comment on this verse, Shemos 3:8.

that even one of a number of possible literal interpretations of *a land flowing with milk and honey* may sometimes be true.[484]

On this same possuk, Shemos 3:8 -- where the Midrash has the unusual milk and fig juice scene – a more representative picture of what אֶרֶץ זָבַת חָלָב וּדְבָשׁ **usually means is given by R. Ovadia ben Yaakov Sforno**[485] **one of the great classic commentators included in most editions of the Mikraos Gedolos – the Rabbinic Bible.**[486] **He explains it as:**

With many cattle, plentiful food, pleasant and nutritious, as it is written:

אֱכָל-בְּנִי דְבַשׁ כִּי-טוֹב; וְנֹפֶת מָתוֹק, עַל-חִכֶּךָ.

My son, eat thou honey, for it is good, and the honeycomb is sweet to thy taste **[PROV. 24:13]**

It is clear from this that he understands דְּבָשׁ **in** אֶרֶץ זָבַת חָלָב וּדְבָשׁ **to be best represented by bee honey. Another well known place where Rashi appears to interpret** דְּבָשׁ **as fruit honey – and not honey from bees -- is Lev 2:11-12.**

כָּל-הַמִּנְחָה, אֲשֶׁר תַּקְרִיבוּ לַיהוָה--לֹא תֵעָשֶׂה חָמֵץ: כִּי כָל-שְׂאֹר וְכָל-דְּבַשׁ לֹא-תַקְטִירוּ מִמֶּנּוּ אִשֶּׁה לַיהוָה. קָרְבַּן רֵאשִׁית תַּקְרִיבוּ אֹתָם לַיהוָה; וְאֶל-הַמִּזְבֵּחַ לֹא-יַעֲלוּ לְרֵיחַ נִיחֹחַ.

[2:11]No meal-offering, which ye shall bring unto the LORD, shall be made with leaven; for all leavening, and all honey, ye shall not make smoke as an offering made by fire unto the LORD. [2:12]As an offering of first-fruits ye may bring [some of] them unto the LORD; but they shall not come up for a sweet savour on the altar.[487] **[EMPHASIS ADDED]**

Rashi writes:

וכל דבש: כל מתיקת פרי קרויה דבש

"or any honey*: Any sweet fruit extract is called honey."** ***[He doesn't say: "Only sweet fruit extract is called honey."]

קרבן ראשית תקריבו: מה יש לך להביא מן השאור ומן הדבש קרבן ראשית שתי הלחם של עצרת הבאים מן השאור, שנאמר (ויק׳ כג יז) חמץ תאפינה, ובכורים מן הדבש, כמו בכורי תאנים ותמרים

***You shall bring them as a first [fruit] offering**: What can you bring from leaven and honey? A first [fruit] offering, namely, the two loaves brought on Shavuoth, which come from leaven, as it is said: "they shall be baked leavened" (Lev. 23:17), and the "first fruits" which [contain] honey, e.g., the first fruits of figs and dates.*[488]

The several comments of Rashi that have been cited so far reveal something counter-intuitive. None of them appear to contradict the idea that honey referred to here or in the many verses that include the expression "milk and honey" must necessarily exclude

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[484] **If the land of Israel were filled with scenes of milk and fruit running together on the ground, it would also be filled with rats and flies – God forbid.**

[485] **(circa 5235-5310; ~1475-1550 CE) From: Sforno Commentary on the Torah: Translation and explanatory notes by Rabbi Raphael Pelcovitz. p260, v. 1, 1st ed. , '87.Messorah Pub. Sforno traveled widely in Europe. [Do we know where he went? Compare Ibn Ezra 7 Rashi.]**

[486] **See, for example: חומש מקראות גדולות שמות 732 pdf pages http://www.hebrewbooks.org/9596 .**

[487] **Note the change from** חָמֵץ **to** כָּל-שְׂאֹר **& parallel to the latter we've** וְכָל-דְּבַשׁ **. All leaven -** כָּל-שְׂאֹר **is more inclusive than** חָמֵץ **. It's made up of: A.** חָמֵץ **, including A.1) the special "2 loaves" that are offered only from: A.1.a) wheat - the best of the chomets species; A.1.b) only the "'first' & A.1.c) only at a particular first time; A.2) other** חָמֵץ **bread & cake that can't be offered and B. separate leavening agents -** שְׂאֹר **- that are: B.1) not in the category of bread & cake; & B.2) never offered. Similarly** וְכָל-דְּבַשׁ **is made up of A.** דבש **of fruit, including A.1) the special bikurim species, of which only A.1.a) the sweetest (dates, figs & grapes); A.1.b only the 'first' & A.1.c) only at a particular 'first' time; A.2) other fruit dvash that can't be offered & B. a separate group – bee honey – that is B.1) not in the category of fruit & B.2) never offered. The parallelism is not exact: e.g., the "two loaves" may be brought from only a single species, but dvash bikurim can be brought from three. The strongest parallels relate to the divisions between groups A & B. It is interesting that the "bikurim declaration" Dev. 26:1-11, includes** זָבַת חָלָב וּדְבַשׁ **tho' these aren't bikurim. If all that's excluded from the altar in 2:11 were included in 2:12, it would say** כֻּלָּם **in Lev. 2:12, not** אֹתָם**.**

[488] **MENACHOTH 58a Engl. modified from same s'rce. Hebrew from**

bee honey. Rashi's comments alert us to the fact that, contrary to the ordinary use of the word דבש, there are some places where the word must include or be limited to fruit honey or luscious fruits – of dates or figs[489]. With this appreciation of what Rashi is saying – and the support of Sforno – we can now look more closely at what the expression אֶרֶץ זָבַת חָלָב וּדְבָשׁ actually meant to those who heard it in the time of Moshe Rabeinu.

Our ancestors were shepherds and were about to enter a new land where they had the potential to live both as shepherds and farmers. This land – The Land of Israel – was qualitatively different from the land they were coming from – Mitzrayim. Immediately after the tenth reference to אֶרֶץ יִשְׂרָאֵל as "a land flowing with milk and honey" we have:

כִּי הָאָרֶץ, אֲשֶׁר אַתָּה בָא-שָׁמָּה לְרִשְׁתָּהּ--לֹא כְאֶרֶץ מִצְרַיִם הִוא, אֲשֶׁר יְצָאתֶם מִשָּׁם: אֲשֶׁר תִּזְרַע אֶת-זַרְעֲךָ, וְהִשְׁקִיתָ בְרַגְלְךָ כְּגַן הַיָּרָק. וְהָאָרֶץ, אֲשֶׁר אַתֶּם עֹבְרִים שָׁמָּה לְרִשְׁתָּהּ--אֶרֶץ הָרִים, וּבְקָעֹת; לִמְטַר הַשָּׁמַיִם, תִּשְׁתֶּה-מָּיִם. אֶרֶץ, אֲשֶׁר-יְהוָה אֱלֹהֶיךָ דֹּרֵשׁ אֹתָהּ: תָּמִיד, עֵינֵי יְהוָה אֱלֹהֶיךָ בָּהּ--מֵרֵשִׁית הַשָּׁנָה, וְעַד אַחֲרִית שָׁנָה.

For the land to which you are coming to possess is not like the land of Egypt, out of which you came, where you sowed your seed and which you watered by foot, like a vegetable garden. But the land, to which you pass to possess, is a land of mountains and valleys and absorbs water from the rains of heaven, a land the Lord, your God, looks after; the eyes of Lord your God are always upon it, from the beginning of the year to the end of the year[490].

Our shepherd ancestors[491] would understand this. It is a superabundant land where goats and honey bees actively range over the whole country – from the deserts in the south and in the rift valley, to the sometimes snowy mountains in the north, to the steep and rolling hills of Jerusalem and to the plains that extend to the Mediterranean Sea. These -- the goats and bees -- draw their nourishment from vegetation that is largely watered directly from Heaven. If the rain is diminished, they are diminished and the people who would depend on them have less to eat. Plentiful natural bee honey is also tells experienced shepherds that the pasture lands are rich in self-seeding flowering plants – which make for healthier, faster growing flocks.

Though other foods – like bread and grapes and olive oil – are also dependent on the rain[492], they are passively depend-

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[489] **The same situation applies in the Talmud where it is understood that the word דבש means bee honey unless it is modified or the context requires it to mean or include something else:**

דף נג,א משנה הנודר מן היין מותר ביין תפוחים מן השמן מותר בשמן שומשמין מן הדבש מותר בדבש תמרים מן החומץ מותר בחומץ סתוניות מן הכרישין מותר בקפלוטות מן הירק מותר בירקות השדה שהוא שם לוויי:
http://www.mechon-mamre.org/b/l/l3306.htm

Nedarim 53a *MISHNAH*. He who vows [abstinence] from wine may partake of apple-wine [cider]; from oil he is permitted sesame oil; from honey, he is permitted date honey ; from vinegar, he is permitted the vinegar of winter grapes; from leeks, he is permitted porret;[10] from vegetables, he is permitted field herbs, because it is a qualifying epithet.
http://www.come-and-hear.com/nedarim/nedarim_53.html

זה דבש דבורים יכול אף דבש הגזין והצירעין אמרת לא ומה ראית לרבות דבורים ולהוציא הגזין והצירעין מרבה אני דבש דבורים שאין לו שם לווי
http://www.mechon-mamre.org/b/l/l5401.htm

Bichoroth 7b: This is bees' honey. You might think that this also includes gazins' honey or hornets' honey as permissible. You cannot, however, say this. And why should you include bees' honey and exclude gazins' honey or hornets' honey? I include bees' honey because it has no qualifying epithet. http://www.halakhah.com/pdf/kodoshim/Bechoroth.pdf

[490] **Devarim 11:9 followed by Dev. 11:10-12**

[491] **Gen 47:3** "…Thy servants are shepherds, both we, and also our fathers."

[492] **As we learn from Deut. 11:14 in the 2nd par. of the Shema – that we say twice every day:**

וְנָתַתִּי מְטַר-אַרְצְכֶם בְּעִתּוֹ יוֹרֶה וּמַלְקוֹשׁ וְאָסַפְתָּ דְגָנֶךָ וְתִירֹשְׁךָ וְיִצְהָרֶךָ

ent.[493] The goats and bees model what our part should be: active seekers of Hashem's goodness. They're part of the unplanted, untended -- yet active -- bounty of the land and the symbol of its special relationship to God.

So we see why milk and honey -- tended directly by Shamayim – are free of most of the limitations that are associated with the foods and products that are cared for more directly by us[494-1]. There's no "first fruits" for milk and honey – bee honey[494-2]; they're completely absent from temple offerings [494-3]; there are no gleanings, corner of the field or forgotten sheaf[494-4]; there's no terumos [494-5], tithes [494-6] or orla [494-7]; no Shmita [494-8] and no Yovel [494-9] for milk and honey – bee honey. They're there always -- as a sign of the potentially unlimited kindness and bounty of God – unless we go astray. [Deut. 29:21-7.]

This natural dependence on the rain in a special land where ordinary irrigation would be of little help, helps us to cultivate humility. In the midst of the three great technology based civilizations of Mesopotamia, Egypt and the seagoing peoples of the Mediterranean – the Phoenicians and Greeks -- the Children of Israel are to be a clear example of how all of us should live. We should not worship the work of our hands. We shouldn't worship the technologies that so often appear to be the source of our well being. We shouldn't put the technocrats in charge. Rather we should understand -- from our clear dependence on forces seemingly beyond our direct control -- that our own ordinary efforts are not the source of our wealth.

The Torah teaches through this dependence on the Rain and Dew of Heaven – that when our efforts are aimed to do what we're supposed to do in this land -- in this world – to keep the Sabbaths and the acts of kindness and righteousness that go with it – that Hashem will provide the rain and the dew in its season. God will provide us not only with our physical sustenance but with the spiritual milk and honey[495] – the sweet nourishment for our souls -- that comes with continuous attachment to the Derech Hashem.

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Why do almonds grow in Israel but not in Egypt? How do goats turn thorny shrubs into nutritious milk? How do bees survive in the desert?

See also in this sefer:

HOW DID THE GENERATION OF THE MABUL GET SO BAD? & HOW DID THE PEOPLE OF S'DOM GET SO BAD SO QUICKLY? DON'T MUZZLE THE BEAST II GATEWAY TO ANIMAL HUSBANDRY

…that I will give the rain of your land in its season, the former rain and the latter rain, that thou mayest gather in thy corn, and thy wine, and thine oil.

[493] **See: "Pitfalls of the seven species of the Land of Israel: Why the bikkurim offering was limited to the seven species" excerpted from: Desert and Shepherd in our Biblical Heritage, Rab. Nogah Hareuveni, founder: Neot Kedumim, the Biblical Landscape Reserve in Israel). He asks why carob, for example, isn't among the 7 foods tho' it's more widely available in Israel than some of the 7. He says the 7 are particularly affected by the weather in Israel from Peysach to Shevuos.** http://www.jpost.com/Home/Article.aspx?id=41395

[494] **1.There is a 3-fold restriction on use of milk with meat. Ex 23:19, Ex 34:26, Deu 14:21. Honey – bee or fruit – is parve; 2. Ex. 23:19, IIChr. 31:5, supra; 3. Lev 2:11-12; 4. Vayik. 19: 9-10; 5. given to kohen, Lev. 22:15, Deut 18:4; 6. Lev. 27:30, Deut. 14:22; 7. Lev. 19:23; 8. Sabbatical -- Exod. 23:10-11, Lev, 25:1-7; 9. Jubilee, Lev. 25:11-16**

[495] **Midrash Rabbah Shir ha Shirim I.3:**

"Torah… is compared to milk and honey: just as these are sweet through hout, so are the words of Torah, as it says …וּמְתוּקִים מִדְּבַשׁ, וְנֹפֶת צוּפִים. '…sweeter also than honey & the honeycomb'

Ps 19:11. … just as milk is pure, so are the words of Torah pure…"

JUDGING PEOPLE FAVORABLY:
ANTIDOTE TO BASELESS HATRED
II GATEWAY TO STATISTICS

We learn that the Temple was destroyed for שנאת חנם - *sinas chinom* - and הרע לשון - *lashon hara* -- *baseless hatred* and *improper speech*[496]. We also learn that in every generation in which the Temple is not rebuilt, it is as though it were destroyed in that generation for the same reasons[497]. It is not difficult to appreciate what improper speech is – though the laws of proper speech according to the Torah are sometimes difficult to understand and apply correctly[498]. But what is baseless hatred? Why should any sane person – particularly one who keeps Mitzvah's – hate another person "for nothing"?

A key to understanding "baseless hatred" is appreciating that in the eyes of God the hatred is baseless, but in the eyes of the person who hates, it appears to be fully justified. The hatred arises from a misunderstanding of what the hated person is actually about. So, the question becomes: How do such misunderstandings arise – and what can we do to prevent them?

Our life experiences fall into two general categories – ordinary experiences and experiences that are outside of the ordinary range[499]. Difficulties and misunderstandings arise when we use methods of judgment that usually work for ordinary experiences in situations that are outside of the range to which these methods apply.

For example, if someone – or some group – does something that looks really reprehensible in the light of our usual methods of judgment, it would be easy to become prejudiced against them. The next time we hear something bad about them – which we'd ordinarily be able to spot as *lashon hara* -- we fail to recognize it. We let our guard down. We allow ourselves to absorb and believe the negative things we hear about those we have come to be prejudiced against. Each new bit of *lashon hara* confirms and strengthens our initial mistake. Before long, we've become so prejudiced that almost anything the person or group does is seen in a bad light. We really hate them.

Meanwhile, the initial action that triggered our prejudice wasn't reprehensible at all. We failed to recognize it for what it was and used the wrong standards in our judgment. The antidote to such mistakes is to see that even those things that appear to be bad may not be bad at all. Before allowing a bad opinion of another person or group to get too comfortable in our hearts, we should allow that we may not fully understand the situation. There may be an explanation of what we see that makes what looks "obviously" reprehensible actually look acceptable or even good.

To do this effectively in the real world – where we find things outside of the normal range far more than we might imagine – we should always remember – as we learn in Perkei Avos 1:6:

'. . . והוי דן את כל האדם לכף זכות.'

"...don…l'kaf schuss."

'…judge all people favorably.' [500]

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[496] The Gemora, Bavli, Yoma, 9b, says only 'baseless hatred' but the Chofetz Chaim, in the intro. to his sefer of the same name, writes: "When the Gemara says that that the Second Temple was destroyed because of baseless hatred and that baseless hatred is tantamount to idolatry, immorality and bloodshed, the reference is not solely to hatred one keeps locked in his heart but also to its expression through lashon hora…" [note 18,Bavli, Yoma 9b, Schottenst. Edit., 1st ed, 1st imp., 5/98].

[497] Same note as above, citing Yerushalmi, Yoma 1:1

[498] The laws are further complicated by the fact that the condition of צָרַעַת -- Tsaraas – usually translated 'leprosy' [Lev. 13:8, etc] is attributed to loshon hara and similar improper speech [Talmud *Arakhin* 15b].

[499] There is, very roughly, an "80-20" rule of life experiences: 80% of what we encounter can be handled with ~20% of our knowledge base. The remaining 20% of experiences require the remaining ~80% of what we know. So, 1/5th of situations need 16X as much information to be handled effectively compared with the "most common" 4/5ths. If this rule holds, the rarest 0.8% of our experiences may need <250X as much information to be handled well compared with the "most common" 80%. [related to Zipf's Law and Pareto Distributions]See also footnote 934.

This is why we need patience in judging unusual situations. It's why we need such large libraries. It's also why we need many wise and learned people in our society and a workable system for accessing them. Together, these enable us to tap into a vast body of knowledge to deal more effectively with the rare but important events that occur in our lives. This vast body of knowledge is only of value to us if we appreciate, as my mother, Z"L, used to say: *"You don't know- how much you know- until you know- how little you know."* [This was apparently from a popular song published before 1909 – get title]

This is one of the reasons we need the system of "Captains of thousands… discussed in this sefer at **GRASSHOPPERS AND GOVERNMENT II GATEWAY TO BIOPHYSICS AND SOCIAL PHYSICS** and why we need such a range of human beings with such diverse histories and experiences – as discussed in this sefer at **FILL THE EARTH II GATEWAY TO NATURE - NURTURE QUESTIONS.** This could be a II Gateway to Statistics. It could also be introduced in those parshas where the tribes of Israel are counted -- where all of the numbers for the twelve tribes end in 50 or 00 in Num. 2:1-34 or 30 & 00 in Num. 26:1-51. See also in this sefer: **CRITICAL TENTHS AND BETTER HALVES II GATEWAY TO COMBINATORICS**

[500] Jehoshua ben Perachiah -יהושע בן פרחיה- was Nasi of the Sanhedrin 3 leadership generations before Hillel. His statement begins:

"*Assume for yourself a master, acquire for yourself a friend [&]*
עשה לך רב וקנה לך חבר-"

The text box below gives an example from the Talmud of how far we should be prepared to go in judging pious people favorably.

THE FOLLOWING STORY IS TOLD:

A man went down from the Upper Galilee and was hired as a worker for a landowner in the south for three years. On the day before Yom Kippur, the worker came to his boss and said, "Give me my wages so I can support my wife and children." He replied, "I do not have them." He said to him, "Give me produce." He replied, "I have none." He said to him, "Give me land." "I have none." "Give me animals." "I have none." "Give me pillows and covers." "I have none." The worker slung his things over his shoulder and went home frustrated.

After the festivals the employer took the worker's wages in hand, and along with them loaded three donkeys -- one full of food, one with drink, and another with tasty foods -- and went to his worker's house. After they ate and drank he gave the worker his wages. He said to him, "When you asked me for your wages and I told you I have no money what did you suspect me of?" "I said per-haps you came across inexpensive merchandise and bought it." "And when you said to me to give you animals and I replied that I have none, what did you suspect me of?" "I said perhaps they were hired out." "And when you said to me to give you land and I told you I had none, what did you suspect?" "I said perhaps it was leased out to others." "And when I told you that I had no produce what did you suspect? "I said perhaps it was not tithed." "And when I told you that I had no pillows or blankets what did you suspect? ""I said perhaps he donated all of his property to Heaven."

He said, "I swear that is what happened. I vowed off all of my property because of my son Hurkanus who did not go to learn Torah. When I went to my friends in the south they annulled all of my vows. As for you -- the same way you judged me favorably, the Omnipresent should judge you favorably."

The employer was the Tanna R. Eliezer ben Horkenos and the employee was R. Akiva, before he became a scholar. There are two other similarly "unlikely but true" stories on the same page. The sages teach:

"One who judges his friend favorably will be judged favorably."

Talmud Bavli, Shabbat 127b

It would have been very easy and natural for the worker in this story to have thought the worst of his employer – that the wealthy, seemingly pious boss just cheated him out of his wages. He would see his boss as a crook and his piety as a fraud. On the way home, this initial mistaken bad feeling would grow. He might hear things told about his employer that he would ordinarily understand to be *lashon hara*. But, already thinking that his boss was a crook and worse, he would be quick to believe almost anything bad he heard. He might even, subconsciously, filter out the good things that he heard about his boss, giving the bad even more space to grow in his soul.

By the time he had gotten home – a long trip in this story – he might be thoroughly convinced that his boss was a complete *rasha* -- a wicked person. With such conviction, he would drop his own guard against speaking *lashon hara* and tell all his neighbors about his terribly wicked boss. Then, even if his boss were to show up to pay him, he and his neighbors might be unable even to greet him or accept the money. The whole neighborhood might be poisoned against a genuinely pious soul who'd done nothing wrong.

So, judging favorably protects us from baseless hatred[501]. Without such hatred, we can better guard ourselves from both hearing and speaking *lashon hara*. This explains why we usually hear that the Temple was destroyed for sinas chinom and lashon hara – in that order. Judging favorably is a strong defense for Peace in our Community and ultimately, for Peace in the World.[502]

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[501] **It also protects us from violating the Torah Law:**

לֹא-תִשְׂנָא אֶת-אָחִיךָ, בִּלְבָבֶךָ; הוֹכֵחַ תּוֹכִיחַ אֶת-עֲמִיתֶךָ, וְלֹא-תִשָּׂא עָלָיו חֵטְא.

"You shall not hate your brother in your heart; reprove you shall surely reprove him and do not bear a sin upon him." **LEV 19:17**

[502] **This piece was inspired, in part, by an incident in a community succah in 5770 & conceived for this sefer in the 9 days before Tisha B'Av of the same year.**

[See text box on next page for the story.]

AN INCIDENT IN SHUL

A kind, pious and thoughtful person was misled by ambiguity and coincidence into thinking that someone had done something reprehensible. Five other people, including the author, were also misled by these unusual circumstances into thinking that someone had done something at least accidentally that they shouldn't have done. None of us stopped to think that there might be another interpretation of what we were observing that did not require anyone to have made a mistake – accidentally or otherwise. None of us thought that we should "don ... l'kaf schuss."

Some hours later, the author discovered what the reality of the situation was – that there had been no mistake and that no one had done anything wrong at all. More accurately, the only ones who had been in error were the six of us who had been carried away by the circumstances and had all failed to "don...l'kaf schuss."

In the course of the next months, I began to notice other examples of this kind – where a mix of ambiguity and uncommon circumstance could lead good people to think ill of others who had done nothing wrong. I even saw how such mistaken thoughts – real *sinas chinom* or something close to it – led to potentially hurtful words and actions. In the first example – in the succah -- I also saw how others' mistaken sense of reality could affect those who actually know what the true situation is. I arrived later than the others and became so caught up in their conviction that a mistake had been made that I forgot what I knew and didn't remember until some hours later. That week, I learned that it is not enough to *"don...l'kaf schuss."* The full expression from Perkei Avos is :

Judge <u>all people</u> favorably…
"דן את כל האדם לכף זכות.

The person who was thought to have done something wrong was a non-Jew. In the Talmud, at Shevu'oth 30a , the expression *"…don ... l'kaf schuss"* is derived from Lev. 19:15:

בצדק תשפוט עמיתך הוי דן את חבירך לכף זכות
לֹא-תַעֲשׂוּ עָוֶל בַּמִּשְׁפָּט--לֹא-תִשָּׂא פְנֵי-דָל וְלֹא תֶהְדַּר פְּנֵי גָדוֹל: בְּצֶדֶק תִּשְׁפֹּט עֲמִיתֶךָ.
"…in righteousness shall you judge your fellow."

<u>SPECIAL NOTE:</u> Before I began to write this piece, I asked a relatively learned person if he had heard of the idea of *"don …l'kaf schuss"* as an antidote to sinas chinom. He hadn't. I then said over the basic idea to a very capable rabbinical student. He was very impressed and said that he had never heard it before. [CONTINUED IN TEXT BOX, NEXT PAGE]

PART II

A somewhat related approach to the problem of sinas chinam – baseless hatred-- may be learned from the character of Aharon HaCohen. His yahrtseit is Rosh Chodesh Av – the beginning of the nine days leading up to Tesha-b'Av. The only date of death explicitly given in Chumash, it's found in Maasei, [Bam. 33:38]. This parsha is always read in the 3 weeks of mourning before the 9th of Av – when we fast in remembrance of the destruction of the Temple.

The most outstanding characteristic of Aharon was noted by Hillel, who taught:

'…Be like the students of Aharon,
love peace & pursue peace…
" אוהב שלום ורודף שלום... ..."
[Avos 1:12]

The root idea of the Hebrew word for peace -- שלום -- Shalom -- is not like its counterpart in English or so many other languages. In English, Peace means calm, tranquility and freedom from violence. In Hebrew it's related to the idea of Shalame - Complete. Aharon loved and pursued peace – by trying to see the complete picture – what the reality was in the relations between and among people. He could see what the participants in a quarrel could not see – that the quarrel was based on an incomplete, mistaken -- picture of how the other actually felt. He would then pursue peace by using his more complete knowledge to bring the disputants to see what he saw – to stop baseless hatred and bring peace.

By being like the students Aharon, we too will Love Shalom – striving to see the complete picture. We too will Pursue Shalom –actively using our knowledge to end the baseless hatreds that are so often built on a too limited view of what a difficult situation is actually about.

[This PART II was conceived Leyl Shabbes Mattos-Massei, 5777—and said over that evening for the first time at the Seuda of Rabbi Yisroel Dov [Beryl] Biderman of #2 Chagiz, Jerusalem.]

[See also p 151 for more on Rosh Chodesh Av & DOING A MITZVAH WITH SHLEMES – IN A COMPLETE WAY]

AN INCIDENT IN SHUL

[CONT. FROM PREV. P.]

With these experiences, I thought that this might be a real chidush and something to include in this sefer.

The evening after I had typed it up and sent it out, I said it over at the Shabbes table of a well known Rabbi. One of his other learned guests said that he had seen this before – that it had been said by Rabbi Levi Yitschok of Berditchev – two centuries ago. I said that it was a sign that I was traveling on the right road – and then went to see if I could find what Rabbi Levi Yitschok actually wrote. I didn't find it in the well known work of Rabbi Levi Yitschok, ספר קדושת לוי – at least not in connection with Lev 19:15 where it would be expected.

I also didn't find it in the extensive commentary assembled by Artscroll in their two volume set on Sefer Vayikra. It was not in the commentary of Rabbi Samson Raphael Hirsch or in the Sefer Chofetz Chaim. The scholar who had thought that he'd seen it before looked in several extensive collections of commentaries & could not find it – including:

. טללי אורות & עיטורי תורה

Two years after conceiving this, ~noon on Tisha B'Av, 5772, I said it over in a short, unscheduled drosha before ~150 people in the Glueck Beis Medrash of Yeshivas Rabbeinu Yitzchak Elchanan. That afternoon in the same building, I saw a video put out by the Chofetz Chaim Heritage Foundation: "THE TRUE VIEW: How seeing the good in others will help rebuild the Bais Hamikdash." One of the Rabbis in that video [Rabbi Jonathan Rietti?] appeared to say something much like this. On the words ... לִרְאוֹת טוֹב ... "...to see good..." [Ps. 34:13] -- "Judge... people favorably" and you will "נְצֹר לְשׁוֹנְךָ מֵרָע guard your tongue from evil ... . בַּקֵּשׁ שָׁלוֹם וְרָדְפֵהוּ. .... seek peace and pursue peace." [Ps. 34:14-15]. [Get more precise references to who said what.] From #130. [The targets of baseless hatred are not innocent – this is a way to alert them of more hidden shortcomings in their derech.]

THE LOMED-VOV TSADIKIM

THE 36 HIDDEN RIGHTEOUS PEOPLE UPON WHOM THE WORLD STANDS[503]

There is a well-known legend that there are "ל" "ו" 'lomed-vov'[504] – 36 -- hidden tsadikim upon whose righteousness the world continues to exist. Were it not for these people, the world would turn back into the sohu v'vohu -- the un-formed and void state before the time of the creation of our world.

These hidden righteous people are not only hidden from the public at large and from each other, they are even hidden from themselves. They themselves, despite the special per-spicacity that comes with being righteous, can't say that they are so righteous as to be counted among the lomed-vov[505].

[CONTINUED NEXT PAGE.]

[503] See #10, p21 in notebook version of this sefer.

[504] In Hebrew, the letter ל lomed stand for 30 and the letter ו vov stands for 6 – so 'lomed vov' is 36.

[505] The legend & # 36 originated from a Gemara in Succah 45b & Sanhedrin 97b where there is a discussion of an "extra" לוֹ in *'...happy are all they that wait for Him* .אַשְׁרֵי כָּל-חוֹכֵי לוֹ' Is. 30:18. Quotes in both Gemaras, are, respectively:

לא פחות עלמא מתלתין ושיתא צדיקי דמקבלי אפי שכינה / בכל יום.../ בכל דרא...

"The world never has less than thirty-six righteous men who are vouchsafed a sight of the She-chinah every day." The world must contain not less than thirty-six righteous men in each genera-tion who are vouchsafed [the sight of] the Shechinah's countenance,

There are at least three problems with this legend – three apparent contradictions. First, we are told that there is no one that is so righteous that they never sin – except for four who have long since gone to the Olam HaEmes – the World of Truth. These four are Binyomin, Amram, Yeshei and כִּלְאָב - Kilov[506]. Second, we are told:

וְעַמֵּךְ כֻּלָּם צַדִּיקִים, לְעוֹלָם יִירְשׁוּ אָרֶץ ; נֵצֶר מטעו מַעֲשֵׂה יָדַי, לְהִתְפָּאֵר.

"Thy People are all righteous…[507]

and "Thy People" refers to the Jews, of whom there are millions. Third, we understand that some of our great rabbis of the recent past – like the Chofetz Chaim[508] – were Tsadikim.

Not only do the second and third points appear to contradict the legend of the lomed-vovnik, they also contradict the first point – that there are only four who were entirely righteous and those four are not with us on earth anymore. How can we resolve these apparent contradictions? Dismissing the legend as "just a legend" would not resolve the contradictions just pointed out.

There is a beautiful way to resolve all of the apparent contradictions – without dismissing the beautiful legend. We assume that at any given time there are lomed-vov tsadikim but that who is counted among them changes from time to time and even moment to moment. Some of us – like the Chofetz Chaim – are counted among the 36 nearly all of their lives -- though they themselves don't know when they are among the 36 and when not. Still, if we think of them as Tsadikim , we are very likely to be on target. And the rest of us? Each of us will have our times when we will be counted among the lomed-vov. We will have done tshuva—repented completely – for any sins we may have committed. At such times our souls have been purified and we stand as righteous people before God.

Each day in the Shmoneh Esrei[509] we repent before God. Each day we have the opportunity to make amends and to ask forgiveness of those who we may have wronged. Each day – each hour – we have the opportunity to stand before God as a righteous person – to be among the upholders of the world. This insight should give us the strength to be that much more careful in our words and actions – even with seemingly little things -- that our time to be among the lomed-vovnik might come and we should be ready for it.

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[506] Talmud Shabbath 55b. Benjamin is mentioned in 29 verses in Chumash. At Deu 33:12 he is referred to as "… beloved of the Lord…" Amram, the father of Miriam, Aaron and Moshe, is mentioned in 5 verses in Chumash. He lived 137 years - Exd 6:20 — more than anyone in the Tenach who lived after him whose age is explicitly given.[Among several opinions in the Talmud, Job lived to be 210 and died at the time the Jews left Egypt: Baba Bathra 15b.] Yeshei (Jesse) – the father of David, appears in 39 verses in Tenach. כִּלְאָב Kilov, Calev or Chileab was King David's second son. He is mentioned in 2 Sam 3:3 and 1 Chron 3:1 – where he is called Daniel. See also YOSEPH IN MITZRAIIM --13 YEARS A SLAVE and Footnote 90.

[507] Isaiah 60:21. Also quoted as the introduction to each chapter of Perkei Avos.

[508] The Chofetz Chaim, Rabbi Yisroel Meyer HaCohen, was one of the most universally loved and respected rabbis of the last several hundred years.

[509] The Shmoneh Esrei means 18 and refers to the prayers that we say everyday – including prayers specifically asking God for forgiveness.

THE QUESTION OF BLOODLETTING[510]

II GATEWAY TO EPIDEMIOLOGY

The questions our children ask us are at the heart of our Torah life. The founding event of the Jewish People -- the Exodus from Mitzrayim -- is to be taught to our children in response to their questions. It's what much of the Passover Seder is about: to stimulate and encourage those questions[511] and provide opportunities for all those present to try to answer them. Yet the Seder is not set up as a classroom for the ignorant to learn from the wise. It's set up so that the wise may learn from the children and each other even as the children learn from all.

Our children's questions are a precious resource to keep us connected to both the Torah and the world around us. Our children don't know what the 'correct' associations are among the many facets of their experience. They ask questions about whatever associations seem most important. They question what the adults may take for granted or may not have even thought about. If we can't give them good answers, we recognize that our own understanding needs improvement.

Each child at each Seder each year will be challenged by different associations and will ask different questions. With many children asking questions, if there's anything that we are doing that's really questionable – something we shouldn't be doing because it makes no sense – our children's questions will help uncover it. This process of questioning is a key part of why our children don't come into the world as little adults—already knowing what needs to be known. They come to question the world. Their questions are an essential bulwark of our defense against nonsense.

Of course, the importance of asking questions is not limited to the Seder and not limited to children. We learn:

[הלל] היה אומר... לא הבישן למד

[Hillel] used to say… A bashful person [one who is too embarrassed to ask questions] can not learn… **[PERKEI AVOS: 2:5]**

והיינו דאמר ר׳ חנינא הרבה למדתי
מרבותי ומחבירי יותר מרבותי
ומתלמידי יותר מכולן

…I have learnt much from my teachers, and from my colleagues more than from my teachers, but from my students more than from them all.

[TALMUD BAVLI TAANIS 7A, HEBREW AT _____ ENGL. AT _____]

The Chofetz Chaim taught :

"A true teacher of Torah encourages his students to ask questions and is not afraid of apparent contradictions.[512]

A good way to encourage our children to ask questions is doing things in an unusual way at the Seder. The bitter herbs, for example, aren't supposed to be the same greens that we have in our salads all year.[513] The children are

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[510] **This would be #135 , not written in notebook**

[511] **The key verses that teach us this question answering way of relating our mesorah are:**

כִּי-יִשְׁאָלְךָ בִנְךָ מָחָר, לֵאמֹר: מָה: הָעֵדֹת, וְהַחֻקִּים וְהַמִּשְׁפָּטִים,
אֲשֶׁר צִוָּה יְהוָה אֱלֹהֵינוּ, אֶתְכֶם. וְאָמַרְתָּ לְבִנְךָ, עֲבָדִים הָיִינוּ
לְפַרְעֹה בְּמִצְרָיִם; וַיּוֹצִיאֵנוּ יְהוָה מִמִּצְרַיִם, בְּיָד חֲזָקָה.

When thy son asketh thee in time to come, saying: 'What mean the testimonies,…? then thou shalt … **DEUT 6:20-21**

וְהָיָה כִּי-יִשְׁאָלְךָ בִנְךָ, מָחָר--לֵאמֹר מַה-זֹּאת: וְאָמַרְתָּ אֵלָיו--
בְּחֹזֶק יָד הוֹצִיאָנוּ יְהוָה מִמִּצְרַיִם, מִבֵּית עֲבָדִים.

And it shall be when thy son asketh thee in time to come, saying: What is this? that thou shalt say…; **EXOD. 13:14**

["What is this?" is also a general question. "This" may be any particular aspect of the seder, not just "What's going on?".]

וְהָיָה, כִּי-יֹאמְרוּ אֲלֵיכֶם בְּנֵיכֶם: מָה הָעֲבֹדָה הַזֹּאת, לָכֶם.
וַאֲמַרְתֶּם זֶבַח-פֶּסַח הוּא לַיהוָה, אֲשֶׁר פָּסַח עַל-בָּתֵּי בְנֵי-
יִשְׂרָאֵל בְּמִצְרַיִם...,

And it shall come to pass, when your children shall say un-to you: What mean ye by this service? that ye shall say … **EXOD 12 :26-7**

Note that it says "<u>when your children shall *say*</u>" not "<u>when your children shall *ask*</u>" – this is the wicked son.

וְהִגַּדְתָּ לְבִנְךָ בַּיּוֹם הַהוּא לֵאמֹר: בַּעֲבוּר זֶה, עָשָׂה יְהוָה לִי
בְּצֵאתִי מִמִּצְרָיִם.

…tell thy son in that day, saying: It is because of that which the LORD did for me when I came forth out of Egypt. **EXOD 13:8**

[512] **[See footnotes 387 & 388] There is also a question & answer process at the heart of teaching about the redemption of the first born: *pidyon haben* פדיון הבן : Ex. 13:13–16**

...וְכֹל בְּכוֹר אָדָם בְּבָנֶיךָ, תִּפְדֶּה. וְהָיָה כִּי-יִשְׁאָלְךָ בִנְךָ, מָחָר--לֵאמֹר מַה-זֹּאת:
וְאָמַרְתָּ אֵלָיו--בְּחֹזֶק יָד הוֹצִיאָנוּ יְהוָה מִמִּצְרַיִם, מִבֵּית עֲבָדִים וַיְהִי, כִּי-הִקְשָׁה
פַּרְעֹה לְשַׁלְּחֵנוּ, וַיַּהֲרֹג יְהוָה כָּל-בְּכוֹר בְּאֶרֶץ מִצְרַיִם, מִבְכֹר אָדָם וְעַד-בְּכוֹר
בְּהֵמָה; עַל-כֵּן אֲנִי זֹבֵחַ לַיהוָה, כָּל-פֶּטֶר רֶחֶם הַזְּכָרִים, וְכָל-בְּכוֹר בָּנַי, אֶפְדֶּה.

"...Every firstborn of man among your sons, you shall redeem. And it will come to pass that if your son asks you in the future, saying, "What is this?" you shall say to him, "...And it came to pass when Pharaoh was too stubborn to let us out, God slew every firstborn in the land of Egypt."

[513] **See in this sefer TASTE AND SEE THAT GOD IS GOOD: MERORIM**

supposed to ask about these unfamiliar herbs precisely because they are unfamiliar – and those questions become the jumping off point for the story of our liberation from Mitzrayim and our whole way of life. If we succeed in educating our children in the importance of asking questions, when they grow up, they'll continue to ask -- to question the world. This is part of the key to the correction of errors that society sometimes falls into[514].

If this is "part of the key", what is the "whole key"? The whole key is really our entire way of life – our 'life seder'. That 'seder' involves doing things in an unusual but highly purposeful way wherever we go. These unusual practices - like the way we dress, our names, the foods we eat —or don't eat – the way we speak and, of course, the Sabbath - should stimulate thoughtful people around us to ask us questions[515]. They are jumping off points for teaching our neighbors – Jews & non-Jews – about the Torah and the Derech Hashem.

Until this past century, the process of asking good questions was apparently not a key element in the education of most doctors. The usual process of educating doctors involved memorizing what great doctors in the past had written. They didn't ask how these great doctors had come to their conclusions and usually the great doctors didn't say. The great doctors of antiquity had become, in effect, gods – sources of unquestionable authority. The education of doctors -- up to recent times -- involved a kind of idol worship.

From ancient times – from before the time of Hippocrates[516]- and certainly from the time of Galen[517], one of the most deadly errors society had fallen into was the belief that copious bloodletting was an effective treatment for pneumonia & other acute infectious diseases. Had students asked their teachers: "How do we know this is true?" they and their teachers would've quickly learned that it wasn't true at all. As we will see, tens of millions of people were literally killed -- bled to death -- over the years, by the failure of students to ask questions about this mistaken treatment.

In the Torah World, there was a very strong hint that something was wrong with bloodletting. Chazal – our sages of the Talmud -- offered a tenfold condemnation of bloodletters – stronger by far than the criticism offered for any of the many other diverse occupations mentioned in that section of the Talmud:

תנו רבנן עשרה דברים נאמרו בגרע מהלך על צידו ורוחו גסה ונתלה ויושב ועינו צרה ועינו רעה אוכל הרבה ומוציא קימעא וחשוד על העריות ועל הגזל ועל שפיכות דמים

...He walks arrogantly, is conceited, sits leaning back, has a grudging and evil eye, eats much and excretes little and is suspected of adultery, robbery and bloodshed..[518]

In a long discussion in the Talmud, our Sages conclude that bloodletting - מקיזין דם is ineffective in the treatment of סרונכי- [synanche] a kind of severe sore throat [also called quinsy [Rashi] or croup & mentioned in 3 other places] that makes it hard to

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[514] I. I. Rabi, Nobel Prize winning scientist, said: " …my mother ….always asked me …'did you ask a good question today?' That difference - asking good questions -made me become a scientist!" _____

[515] See in this sefer **AND THEIR CRY CAME UP UNTO GOD,** particularly , footnote 154.

[516] Hippocrates [Ἱπποκράτης] of Cos, 460 BC ~370 BCE, prescribed bloodletting for pneumonia "until the patient fainted"[give ref.] .

[517] Galen, more properly, Claudius Galenus [Γαληνός] See, in this sefer **DOCTORS IN GEHENOM**

[518] Kiddushin 82a____ J. Preuss, MD, author of "Biblisch-talmudische Medizin"[1911&'23 (Biblical and Talmudic Medicine") Trans. & Ed. by Fred Rosner, Sanhedrin Press, '78], cites this passage at his p. 33 n. 321, but only to show that word גרע means bloodletter – not what Chazal wrote about bloodletters. He also cites "the best of the doctors…" [Kidushin 4:14] but says that it is from "an unknown sage"- not that it's said over by R. Yehudah ben Ilai—one of our greatest sages. He makes no mention of the rest of the sentence – which associates doctors with butchers and Amalekites. He does say, though, citing the aggadic *Avoth de R. Nathan 36.5, that* "…the physician is counted among the seven types of professions that have no share in the eternal bliss" [p.23, n. 197 & 198]. The text actually says טוב שברופאין "the best of the doctors".____ A town's doctor, bloodletter, scribe & teacher can be one person [Sanh.17:]. This may help explain how a scribe & teacher could be listed at 36.5 among those "who have no share…" if they are the same person as "the best of the doctors". Some say that the 7 aren't 7 professions but 7 individuals listed next at 36.6. This is suggested by Moses Kunitzer, Ha-Mazref, part 1, p. 74, cited in Soncino , 2nd ed.'71, p.181, n. 48. At n. 41, the Editor of Soncino says these 7 professions "have no share…" "*If they do not conduct their affairs with the utmost caution & sincerity.*" With all this, the Talmud describes Abba the bloodletter as exceptionally pious and modest. Ta'anith 21b-22a

breathe[519]. Still, it took two millenia before the question of the value of bloodletting in the treatment of pneumonia was clearly asked and answered on the basis of sound experiment.[520]

519-I Topic runs thru' Yuma,83.-84:[& on סרונכי, Snh. 37:,Keth.30:, Sot.8:, Num. R.s.14[Jastrow,p 1024]] re. what treatments may be used on Shabbes, con-cluding those that are effective may be used. Though some saw bloodletting for this as effective, the Sages said it wasn't. Bloodletting is mentioned much in Talmud & some Chachamim support it:

אמר אביי אמרה לי אם לשימשא בת יומא כוזא דמיא

Abbaye said his mother [actually his governess]*...said [it] should be used on the 2nd day of sunstroke.* Gitten 67b;

אמר רבי יוחנן עשו הקזת דם בארץ ישראל כרפואה שאין לה קצבה

...bloodletting in the Land of Israel [where Galen had more influence than in Bavel?] *is a 'healing that has no limit.' A husband must pay for it as for his wife's sustenance.* KISUBOS 52B

It may be that it makes the wife feel good, even if it's not 'effective.' -- for Shalom Bayis—like 'spitting in the eyes' of Aaron or R. Meir, ASA. But, see footnote 526-A, for a disease where chronic bloodletting might help.

רב קטינא אמר ריש לקיש דם רבה שחין רבה

...much blood (from insufficient bloodletting) much skin disease. BECHOROS 44b;

שמונה רובן קשה ומיעוטן יפה ואלו הן דרך ודרך ארץ עושר ומלאכה יין ושינה חמין והקזת דם

'8 things are harmful in abundance but beneficial in moderation ...warm water & bloodletting'. Gittin 70a;

אמר שמואל פורסא דדמא כל תלתין יומין ובין הפרקים ימעט ובין הפרקים יחזור וימעט

Shmuel said the time for bloodletting is every 30 days... [60 days at 40 yrs, etc.] SHABBES 129B.

WITH ALL THIS, THERE'S APPARENTLY NO CASE WHERE THE SAGES AGREE THAT BLOODLETTING IS BENEFICIAL FOR *ACUTE* DISEASE.

519-II Sixteen centuries later, former President George Washington was treated for an asphyxiating sore throat – similar to synanche -- with massive bloodletting ~ 80oz. in 12 hrs. His doctors also gave him two emetics – based on mercury & antimony – & he died that day -12/14/1799 - probably of the treatment. He had never been wounded in battle. [A]

Just hours before & ~150 miles away, a Philadelphia jury, ignorant of Washington's approaching death, handed down an intensely ironic verdict. They convicted autodidact author William Cobbett of libeling "the best of the Doctors", Benjamin Rush, fining him the then huge sum of $5,000. [~50X U.S./capita income/yr.] Cobbett had published accusations against Rush & his associates, saying, correctly, that they were killing thousands of yellow fever patients and other sick people with excessive treatments of bleeding and mercury purges. He had written:

"The times are ominous indeed,
"When quack to quack cries, *Purge and bleed*" [B]

In his charge to the jury, the judge made clear the 'libel' for which Cobbett was being charged: *"He repeatedly calls the plaintiff [Rush] a quack...[and] charges him with intemperate bleeding [and] injudiciously administering mercury in large doses in yellow fever...styling him the Sampson in medicine...and slaying his thousands and tens of thousands."* [C] [JUDGES 15:15-16] Three 'Rushite' doctors appeared for Rush. The trial started after a 2 year delay – with Cobbett known to be in NYC & unable to appear himself. [D]

519-III To his credit, Rush had at least tried to help the sick. Most of the rest of his subsequent supporters, including then Pres. Washington and almost all Federal & State officials, fled the city. The hero of the day was Stephen Girard (1750-1831). He was a home schooled, autodidact, French ship captain – licensed at the age of 23 -- turned Philadelphia merchant. He said the disease was not contagious, personally attended the sick in an ad hoc hospital he managed and went on to become the richest person in the country [E].

A. "Death of a President", D. M. Morens, NEJM 1999; 341:p. 1845-50, Dec. 9, '99. _____ **B.** W. Cobbett, Sept. 19th, 1797, printed as p. 167-68 of Porcupine's Works, vol. VII, 1801. _____ **C.** The Constitutional Diary and Philadelphia Evening Advertiser, Dec. 14 [16] 1799, Vol 1 No. 21, p3, col. 2;Cobbett actually wrote*: "Dr. Rush, ...calls mercury 'the Samson of medicine.' In his hands and in those of his partisans, ...they have slain more Americans with it, than ever Samson slew of the Philistines. The Israelite slew his thousands, but the Rushites have slain their tens of thousands."* See B, supra, p 168. Cobbett, who became a leading author & MP, showed that the number buried each day in Philadelphia, rose sharply after Rush touted his mercury purges & bloodletting in 600 word letter to the Federal Gazette [Sept.12, 1793 p.3 col. 3]--the only local daily paper still in circulation. [The others closed in the face of the epidemic.] This may've been the 1st epidemiological study based on numerical data in history. It was very widely read. In 2 wks bef. letter, burial rate was 22.7 ±7.7; range 11 to 42. In 2 wks after & incl. day of pub., it was 64.4 ±17.8; range 33 [on 9/12, '93] to 96..[What was Rush doing after 9/12/93? What is LD50 for Hg? Life cycle of mosquito?]Porcupine's Works vol. XI, 1801, p. 267-9 & p108-9 of Mathew Carey, 11/23, 1793, "A Short Account of the Malignant Fever...In Philadelphia..." _____ **D.** Bring Out Your Dead: ...Yellow Fever in Phil. ... in 1793. J.H. Powell, 1993, U. Penn. _____ **E.** The life and character of Stephen Girard H.A. Ingram, 7th ed. Rev., 1896

520 **A.** A very good review of the history of the use of bleeding in the treatment of pneumonia is Haematophobia: an Historical Sketch by Dr. G. W. Balfour. [1823-1903] [SEE TEXTBOX, next page].

He writes of Pythagoras [~570–~495 [470?] BCE] , that he said: *"The soul is nourished by the blood."* quoting, Diogenes Laertius [3rd Cent CE]. Compare:....אַךְ-בָּשָׂר, בְּנַפְשׁוֹ דָמוֹ לֹא תֹאכֵלוּ

*...the life thereof, which is the blood thereof...*GEN 9:4

... הַנֶּפֶשׁ הוּא, הַדָּם כִּי ... *for the blood is the life...*DEUT. 12:23

The obvious similarity is probably not accidental. Pythagorus's father, Mnesarchus, came from Tyre. Pythagoros returned there with his father and was taught by the Tyreian scholars. He also learned from the leading scholars around Mt. Carmel in Israel, as well as in Egypt, and Babylonia. It's likely from this that he learned enough Torah in Mt. Carmel & Babylonia to appreciate the sanctity of the blood. [Based on the life of Pythagoras by Iamblichus, [~245-~325CE] who wrote, inter alia*, "In Phoenicia he* [Pythagoras] *con-versed with the prophets who were the descendants of Moschus the physiologist,..."* Greek text with Latin Trans. & notes. Ch. 3, n. 4, pdf p. 61-2.] Some say Moschus was Moshe e.g. "The True Intellectual System of the Universe..." Cudworth, 1678, Book 1, p 12. _____ There's no *sh* in Greek. "The earliest ref... to a Greek Jew is an inscrip... dated c. 300-250 BCE, found in Oropos, a small coastal town between Athens & Boeotia, which refers to "Moschos, son of Moschion the Jew", who may have been a slave." [Wikip retr 2/5/'17]Citing: David M. Lewis ('02)& Rhodes, P.J., ed. Selected Papers in Greek and Near Eastern History. Camb. U. Press. p. 381.

B. JAN BAPTIST VAN HELMONT 1579 – 1644CE . **Challenged the Galenists who preferred bloodletting, saying** *"...come down to the contest ye Humorists*:[i.e. Galenists] *Let us take out of the Hospitals, ..., 200, or 500 poor People, that have Fevers, ...&c..., let us cast lots, that one halfe of them may fall to my share, and the other to yours; I will cure them without blood-letting and sensible evacuation; but do you do, as ye know ...we shall see how many Funerals both of us shall have...." p526,* Van Helmont's works 1664, English translation of a work originally written in Dutch and Latin two or more decades before. Posthumous pub. by van Helmont's son, 1652, Amst., ORTUS MEDICINAE, p. 421, col 1 par 2, lines 8-21 _____ _____

[NOTE CONT. ON NEXT PAGE.]

The one most responsible for this work was Josef Dietl.[521] He compared the two standard treatments: bloodletting and "tartar emetic", with "no treatment" in a study of a total of 380 patients with pneumonia. Both standard treatments more than doubled the death rate -- literally killing over 10% of the patients treated.[522] In the decades that followed, doctors across Europe, the USA and much of the rest of the world cited Josef Dietl's work.[523] His good questions and good answers stopped the doctor-worshiped *"bloody Moloch"* [524] that, among pneumonia sufferers alone, already killed roughly twenty million [525].

He was, with this challenge, "the first to suggest a prospective clinical trial in which the two groups of patients to be compared were randomly selected from the same population." p. 19 "Galen, Van Helmont and Bloodletting" Peter H. Niebyl in Science Medicine and Society in the Renaissance, v. 2, p13-23, Allen Dubos, Ed. '972.

Van Helmont was initially educated for the ministry and was familiar with the Torah in Hebrew. His book begins with a dedication to God – with the four-letter name printed in Hebrew in large letters at the head of the page. This background gave him the sense that …

…the life thereof, which is the blood…. בְּנַפְשׁוֹ דָמוֹ

as quoted above in connection with Pythagorus. Thus, both Pythag. & his successors & Van Helmont & those who followed him, may've been guided away from a deadly practice by their link to Torah.

[521] 1804-78CE. He worked in an environment in which F. W. K. Fleischmann's Homeopathy in the nearby Gumpendorf Hospital in Vienna was proving more effective in the treatment of many diseases than the conventional bleeding & purging. Yet it was clear to many that the amount of medicine in homeopathic treatments was too small to be effective – leading to the idea that "no treatement" was better than bleeding, etc.. Dietl would become the rector of the oldest and most prestigious university in Eastern Europe -- Jaglionian U. (the university of another scientific revolutionary – Nicolas Coppernicus) - and the elected mayor of Krakow, Poland.

[522] 85 patients received bloodletting: 17 died; 106 tartar emetic: [hydrated potassium antimonyl tartrate] 22 died; 189 "no treatment": 14 died=7.4%. (17+22)/(85+106) = 20.4%; *[20.4% is also the fatality rate in a review of ~500 studies with a total of 465,400 patients & 94,826 deaths covering ~a century, ending in 1904, with most of the data post Dietl. "The Mortality and Management of Pneumonia" Edward F. Wells, JAMA V. 43#13. 9/24, 1904, p866-75* [A]] Standard treatments are 2.76 X worse than no treatment. "Bloodletting In Pneumonia From Clinical And Physiological Standpoints" (orig. in Ger. 1849 [B] "Der Aderlass in der Lungenentzündung; klinisch und physiologisch erörtert" 134+ p.[Internet Archive, Google eBook]. In an expanded study in Krakow, Dietl understood that, ethically, he could no longer use the standard treatments. 2nd series pub. in 1852: 750 "no treatment": 69 died. This was published in the proceedings of the Jaglionian Univ. & Cracow Scientific Society, [C] Rocznik Towarzystwa Naukowego Krakowskiego, V.21, p113-44,[Google eBook] & as a separate book in Polish, with revisions, 1852 [D] "o upuście krwi w zapaleniu płuc ze stanowiska kliniczno-fizyologicznego"148+p.

A _____ B _____ C _____ D

Edinburgh. Med. J., Sept. 1858, p. 214, *p. 852-854; Oct 9, 1858, BMJ, an abstract of the former* _____ DR. BALFOUR began his career in 1846, with 3 months of daily observations of homeopathic treatments [a] while reviewing the "hay tea" treatments of Skoda in the conventional General Hospital of Vienna, nearby [b]. Curiously, in his 1884 retirement address, he does not mention Dietl, though he devoted ~8,000 words to the transformation of medicine that had occurred in his career – from the copious use of bloodletting in pneumonia to its rejection by the great majority of physicians.[c]

a Report on the Homoeopathic Treatment of Acute Diseases in Dr. Fleischmann's Hospital, Vienna ...May …July, 1846. G. W. Balfour, p.567-93, British & Foreign Med. Rev., V. 22, Jul-Oct 1846; _____

b "Notes on the Practice of Skoda," June 1847; *Edin. Med. and Surg.J.,* 1847, p. 397. Discussion: *Monthly Med. J.,* Aug. 1847, p. 142; c The Transactions Of The Medico-Chirurgical Society Of Edinburgh V. III, New Ser., 1884 p. 8-33

[523] A Google search for ebooks using the terms Dietl 85 106 189 [see footnote 522] showed 18 books in German, 2 in Dutch, 53 English, 14 French, 2 Italian & 1 in Czech. The most recent item in this search was 1902 (90 total). Using the Russian spelling Дитль and the same three numbers turned up 4 more in Russian – with the latest 1905. A search for Google ebooks in Spanish using just Dietl, showed several works from the same period but often with less legible type. Thus, applying this standard to the other languages would turn up more items. [May 10'11]. [In Feb '13 more recent `books were found –up to 2005] Only 1 cite to Dietl's pneum. work in Web of Science: Between Scrutiny and Treatment: Physical Diagnosis and the Restructuring of 19th Century Medical Practice J. Lachmund, Sociology Of Health & Illness V. 20 # 6 p. 779-801, 11/1998

A Century ago, the top medical textbook of the day, by Sir William Osler, has, for the treatment of pneumonia:

> ***"To bleed at the very onset in robust, healthy individuals in whom the disease sets in with great intensity and high fever is, I believe, a good practice. Late in the course marked dilatation of the right heart is the common indication. The quantity of blood removed must be decided by the effect; small amounts are often sufficient."***

p 99, *Principles and Practice of Medicine: Designed For the Use Of Practitioners and Students of Medicine. 8thed. 1912. It has 5 mentions of "Dietl's crisis" – a severe kidney condition first described by Dietl -- and no mention of his study of pneumonia.*

[524] Van Helmont wrote of a *"bloody Moloch"* presiding over medicine. p399 Sec. 34 of ref. cited above: see footnote 450.

[525] **If the rate of community-acquired pneumonia was ~ 1% from the time of Galen [a] and the population in the area subject to "doctors or other skilled health professionals" using such treatments averaged ~100E6 adults from ~200 CE to 1850CE [b] and 1/4th of the people were treated by such "doctors… "[c] & ½ of the "doctors…" used bleeding [d] & killed 10% more than if they had had no treatment, then 0.01x 100,000,000 x 16.5 x100x 0.25 x 0.5 x 0.10 ~2E7 extra deaths. Each "doctor…" using these methods – mostly venesection -- to treat pneumonia would have killed ~12 people with such treatment in the course of their career. It should be clear that these numbers apply only to pneumonia. It is very likely, based on a preliminary review of the data for cholera, malaria, typhus, yellow fever and even puerperal fever that the "standard" treatment – of venesection - for these and other acute infectious diseases were often the cause of death of those treated – compared with doing nothing. This would be ~2X iatrogenic deaths due to venesection calculated here. Tartar Emetic was used in < 3% of cas-**

We can only imagine what other questions of "purging and bleeding" must be asked in our day to stop similar levels of carnage that we've somehow failed to see.[526-A & B]

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es over the period from Galen to Dietl: "…treating Pneumonia, by large doses of …[T. E.], …[was] introduced into general practice by [Giovani]Rasori, … [in ~1801" p. 688 Medical And Surgical Memories, V.1, 1876, Joseph Jones]. _____

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a. 4.2 E6 ambulatory care visits for pneumonia in 2006 in USA. "Burden of Community-Acquired Pneumonia in North American Adults" *T. M. File Jr & T. J. Marri.* _____ .

> *"The use of solid fuels in households …such as wood, charcoal and crops is associated with increased mortality from pneumonia …among children …[and] from chronic obstructive pulmonary disease and lung cancer (where coal is used) among adults."*

p 99 "WORLD HEALTH STATISTICS 2010" WHO. http://www.who.int/whosis/whostat/EN_WHS10_Full.pdf This suggests that the incidence of pneumonia in the past – when most homes were heated with wood, & other fuels that produced a lot of smoke – could've been substantially higher than what is found today or than what was found in the times of Josef Dietl.

b. infra, see footnote 707. This may be very conservative, as Galenic medicine spread through the works of Ibn Sina (Avicenna) (980-1037CE) to S. Asia in the 13th Cent. CE – where it became known as Unani medicine. It spread beyond S. Asia following Islam. It also spread to the far reaches of the world through the European empires in the 3 centuries before Dietl. The actual treatment of pneumonia by bleeding – until the person faints - actually dates from before Hippocrates (460-370 BCE), who said, in "*peripneumonia and pleuritic affections …the inner vein in the arm should be opened …and blood abstracted …so as to bring on fainting, after which a clyster is to be given*." Hippocrates, *Genuine Works.* Trans. by Francis Adams, New York, 1886, i, 261, 262, 269 quoted in Venesection 1916 by Walton Forest Dutton, see above, p. 10.

c. A possible indicator of this is:"Births Attended By Skilled Health Personel" The median rate for all reporting countries is 51% for births in rural areas; 39% for those in the lowest wealth quintile; and, 36% for the lowest education level of the mother (defined in note "e", p175 of that table as "no education", WHO report, supra, at Table 8, summarized on p. 152-3. _____ It is also assumed that a higher % were treated by "doctors" in the 19th century than in the earlier centuries.

d. It appears that, until the advent of homeopathy in the early 19th Cent. CE, the great majority of 'doctors' in this region used bleeding, so 50% is probably low.

526-A There's a genetic disease that causes excessive intestinal iron absorption – *homozygous hemochromatosis* - affecting ~1/250 of European ancestry. However "[as only 10%]… (one in 2,500) of those with C282Y homozygosity present with end-organ damage or clinical manifes-tations of hereditary hemochromatosis, most persons who are positive for hereditary hemochromatosis are asymptomatic." Prevalence among U. S. Hispanics, Blacks & Asians was ~1/10, ~1/60th & <1/100th of this, resp. "Hereditary Hemochromatosis" B. K. Crownover, & C. J. Covey, Nellis Fam. Med. Res., Nellis AFB, Nev. ,*Am. Fam Physician*, '13 Feb 1;87(3):183-90._____]It's effectively treated first by weekly & then less frequent bloodletting of ~500ml of blood. "Hemo-chromatosis: A Common, Rarely Diagnosed Disease" V. J. Felitti, Com-mentary: D. Baer, The Permanente J./ Winter '99/V.3,#1._____ A recent [2014] review article with 73 references in a leading medical journal for specialists in medical applications, explores potentially beneficial effects of phlebotomy in a wide range of diseases including Alzheimer's, secondary polycythemia & cycle cell anemia, However it notes: "Currently, therapeutic phlebotomy is approved [in Western Medicine] for three main indications: haemochromatosis, polycythaemia vera and pophyria cutanea tarda." ["Current applications of therapeutic phlebotomy", Tarek B. Assi & Eliz. Baz, Blood Transfus. 1/'14; 12(Suppl 1): s75–s83. _____ Corresp: Elizabeth Baz, American Univ. of Beirut, e-mail: ek01@aub.edu.lb]

The latter 2 are very rare: 1. Polycythemia vera & 2. porphyria cutanea tarda, with prevalence of 2.2/10K & 1/10K resp. ['Prevalence of polycythemia vera and essential thrombocythemia' X. Ma, et al, Am J Hematol. 5/'08;83(5):359-62 _____ & Office of Rare Diseases Research, NIH _____, resp.] "[1…] is not often seen in people under age 40…[&]usually develops slowly. Most patients do not have problems related to the disease after being diagnosed.' _____ 2. The median age of onset is ~50. Familial and Sporadic Porphyria Cutanea Tarda: Anette Bygum, et al. Acta Derm Venereol 2003; 83: 115–120. _____

Most people in the time from Galen to Dietl didn't live long enough to show symptoms. In 1845 in UK, Life expectancy at age 5 [Le5]=55 years; 2011 = 81 years. Max Roser_____From 200-1850CE, Le5 was probably ~40 years. Sarah Woodbury, Welch Royals____

526-B THERE IS AN INTERESTING HISTORICAL PARALLEL BETWEEN BLOODLETTING AND ACUPUNCTURE IN CHINA AND HOMEOPATHY AND THE WORK OF JOSEPH DIETL IN EUROPE:

In the earlier parts of China's Neijing [A] *"bloodletting is … fairly routine"*[B] *and, according to some, "was actually the chief therapeutic means promoted in that work".*[C] *It may be that doctors in China who were concerned about the high death rates associated with bloodletting may have tried many other therapies and discovered acupuncture. Acupuncture displaced bloodletting* as it reduced fatalities and was explained as manipulating the same "flows" within the body that bloodletting was supposed to deal with.

The difference between the Chinese adoption of acupuncture and what happened in Europe with Homeopathy, is that acupuncture worked on 'principles' similar to bloodletting while Homeopathy worked on a completely different principle. Acupuncture didn't engender criticism that it was worthless – because it seemed more effective at doing the same thing as bloodletting. In Europe, Homeopathy was seen as worthless by those who didn't buy into its completely new method of operation. Thus, when Dietl saw the apparent success of both Homeopathy in nearby Gumpendorf and 'hay tea' used by his friend, Joseph Skoda [D], he guessed 'no treatment' was better than the usual treatments – and tested his idea.

There were also people in Europe who were schooled in the Torah – like V' Helmont &, possibly, the Pythagoreans -- who had an additional source of strength in arguing against the wanton spilling of blood.

A."…the fundamental doctrinal source for Chinese medicine for more than two millennia… comparable... to the Hippocratic Corpus in Greek medicine or the works of Galen in Islamic and medieval European medicine." Wikiped. 5/5/'11. B. Shegehisa Kuriyama"Interpreting the History of Bloodletting"J Hist Med Allied Sci.'95, 50(1):11-46. C. Maruyama Masao. "Shinkyu igaku to koten no kenkyu" Osaka, Sogensha, 1977. D. J. Skoda, 1805-81, pioneer in use of percussion for diagnosis. Became a leading medical educator -researcher in Eur.

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see, in this sefer:
1. THE FOUNDATIONS OF THE WORLD,
2. AN ORIGINAL DOCTOR JOKE

TWO OLD DOCTOR JOKES APROPOS BLOODLETTING:

I. When making house calls, be sure to get there before the patients get better by themselves.

II. QUESTION: What's the difference between the Angel of Death and a Doctor?
ANSWER: They both kill, but one charges first.

TO MOVE THE EARTH[527]

Archimedes is considered to have been the greatest inventor / scientist / mathematician of antiquity[528]. He discovered how to calculate the volume and surface of a sphere and cylinder of a given radius[529] and calculated the number of grains of sand that could fit into the visible universe -- a universe with the sun at its center and the stars immensely far away[530]. He wrote a book on the lever and invented many useful machines. **[continued next page]**

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[527] **This would be #134.**

[528] **Archimedes of Syracuse (287 – 212) BCE**

[529] **The surface area of sphere is:** $4\pi r^2$

The volume of a sphere is: $4/3\pi r^3$ **where** r **is the radius of the sphere and** π **is the ratio of the circumference to the diameter of a circle.** π **is approximately equal to 3.1416 or 22/7 . One may arrive at the 1st formula from the relation of a sphere to its circumscribed cylinder. One may arrive at the 2nd formula by dissecting a cube into 6 equal, square-based pyramids, each hav-ing a common apex at the center of the cube. Here we see the volume of each pyramid is 1/3 of the area of the base X the height where the height is measured perpendicular to the base. We see this formula continues to apply to any pyramid or cone. We imagine a cone with its apex at the center of a sphere and its base on the surface. Imagine such a cone getting progressively narrower so that its base will approach the area of the surface of the sphere cut out by the cone. If the sphere is now packed solid with such cones, the sum of the volumes of all the cones will be 1/3 of all the bases x the height. 1/3 of all the bases is the same as 1/3 of the surface of the sphere and the height of the cone is equal to the radius of the sphere: thus, the formula for the volume of the sphere.**

[530] ***"The Sand Reckoner"*****–Αρχιμήδης Ψαμμίτης,** ***Archimedes Psammites*****. Found on p. 221-32 of: "The Works of Archimedes", T. L. Heath, Cambridge U. Press, 1897_____. Archimedes says he bases his calculations on the work of Aristarchus of Samos, an older contemporary [310 BCE – ca. 230 BCE] According to Archimedes, Aristarchus assumes that the ratio of the diam. of the Earth to the diam. of its orbit around the Sun ≈ the ratio of the diam. of the Earth's orbit around the Sun to the diam. of the universe at the distance of the stars. This assumption was apparently based on the failure to observe any parallax shift when viewing the stars from from opposite sides of the Earth's diam. (a ratio of 7.9E3:18.6E7 miles,≈1:24E3) or when viewing the stars from opposite sides of the Earth's orbit around the Sun. [Archimedes used different values of both] He invented a sytem of exponential annotation to calculate the required number & concluded 10^{63} grains would fill the world, as defined.**

According to the Greek philosopher/historian Plutarch [46 – 120 CE], a leading Athenian philosopher of the day, Cleanthes [c. 330 BCE – c. 230 BCE], called for the indictment of Aristarchus ***"on the charge of impiety for putting in motion the Hearth of the Universe [the Earth], this being the effect of his attempt to save the phenomena by supposing the heaven to remain at rest and the earth to revolve in an oblique circle, while it rotates, at the same time, about its own axis ".*** **From Plutarch's** ***"On The Face In The Moon's Orb",*** **quoted by Sir Thomas Little Heath in The Copernicus of Antiquity (Aristarchus of Samos).1920.**

When, some 18 centuries later, Copernicus [1473 – 1543 CE] renewed interest in this heliocentric view, the non-Jewish Biblical scholar, poet and astronomer, Giordano Bruno [1548 – 2/17, 1600 CE] took the opposite position of the Cleanthes. Bruno understood that if the stars were so immensely far away, they could be as large as our sun & could even have planets going round them. He saw that this meant that the universe was at least 10^{12} larger than what was imagined with the Earth-centered view. For this and related ideas – which he promoted throughout much of Europe -- he was held in prison for seven years to encourage him to recant. When he didn't – because he understood that the heliocentric view showed the greater power and glory of God – the political powers of his age bound him and gagged him and burned him alive in a central Roman market square.

One of his most famous quotes -- on what can be done with the lever – is:

δός μοί (φησι) ποῦ στῶ καὶ κινῶ τὴν γῆν.[531]

"Give me a place to stand on and I will move the Earth."

It's very impressive. But when we think about it, there's something missing. Where is he going to move the earth? ... and why?

Two millennia before Archimedes there was another great inventor -- Noah. Noah invented the plough and a host of other labor saving devices[532]. The plough combines several simple machines into one device. It's like the point of a needle – a force concentrator and hole expander[533]. It's also a lever -- multiplying force to cut through or lift sod and rocks. Its purpose is "to move the earth." Noah invented the plough to make it easier for people to live through agriculture.

Seeing how he sought to help humanity "to move the earth" with the plough, Hashem put him in charge of an even greater project: to move the earth – the people on the earth – from the edge of destruction to the ways of God. Despite Noah's prodigious abilities and great, patient effort over the course of 120 years, he was not successful in moving even one "Ben Adam" [which could be understood to mean "Son of the Earth"] to repentance.

Moving the Earth to the Ways of God would ultimately require a completely new set of tools – though older than the Earth itself. The new set of tools is the Torah. It gives us the lever, the place to stand and – most importantly -- the direction and purpose: to move the Earth – and all its inhabitants -- to the Derech Hashem.

PICTOGRAM OF A PLOUGH

FROM THE TIME OF ANTEDELUVIAN
NOAH
IN MESOPOTAMIA

From: Handbook To Life In Ancient Mesopotamia, by Stephen Bertman, Oxford Univ. Press, 2003, p. 146

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[531] **We don't' have this quote directly from Archimedes in any of his extant works. Many of his works have been lost. This quote is attributed to Archimedes by Pappas of Alexandria, one of the last great Greek mathematicians of antiquity (c. 290CE – c. 350CE). par. 19 _____ Archimedes did actually move the Earth – together with Aristarchus and later, Copernicus – from being fixed at the center of the Universe to revolving on its own axis while orbiting the Sun.**

[532] **Midrash Tanchuma, Gen. 11_____ -- already cited at footnote 18. Also use of tools in Isaiah to make things of wood – good things and avoda zara quote at compass and plane – connect to parsha with this haftorah and to eye of a needle. Is 44:13, etc.:**

חָרַשׁ עֵצִים, נָטָה קָו, יְתָאֲרֵהוּ בַשֶּׂרֶד, יַעֲשֵׂהוּ בַּמַּקְצֻעוֹת וּבַמְּחוּגָה יְתָאֲרֵהוּ; וַיַּעֲשֵׂהוּ כְּתַבְנִית אִישׁ, כְּתִפְאֶרֶת אָדָם לָשֶׁבֶת בָּיִת.

The carpenter stretcheth out a line; he marketh it out with a pencil; he fitteth it with planes, and he marketh it out with the compasses, and maketh it after the figure of a man, according to the beauty of a man, to dwell in the house.

[533] **See in this sefer: THE POINT OF REPENTANCE**

MIDOS ON THE METRO

OR

SUBWAY LOVE AND THE EXPANSION OF SPACE-TIME[534]

There are many mitzvahs that are particularly important when we're riding on a crowded subway. The most obvious are: giving up our seat to an older person[535], "love thy neighbor as thyself[536] and making a Kiddush Hashem. There's also the injunction to guard our souls from danger – spiritual and physical וְנִשְׁמַרְתֶּם מְאֹד לְנַפְשֹׁתֵיכֶם[537]. Two less obvious but still very important precepts on the subway are *judging others favorably*[538] and *avoiding 'midos S'dom'* – the character of the people of Sodom[539]. As we will see, the extent that people observe all of these precepts has a direct, measurable impact on the way the subways operate.

In 5767 ['07CE], the Mayor of NYC called for high tolls on trucks and cars entering the most built up parts of the City. His aim was to reduce congestion and create a revenue stream for funding mass transit. It was understood that many of those tolled off the road would take to the subways. It was also clear that some of the subway lines that would have to carry more passengers were already operating at capacity. This meant both that no new trains could be added to carry more people and the existing trains were already crowded. Any more riders added to these crowded trains would be taking congestion off the streets and adding it to the subways. It wasn't clear that there would be any real net benefit. [540]

A close look at the actual data for one of the city's most crowded subway routes -- the Lexington Avenue Express – southbound in the AM rush hour – showed something very surprising. It was carrying a maximum of ~30,000 people per hour on 25 full-length trains. The experts said that they couldn't get any more trains through and the existing trains were already considered 100% occupied. These numbers just didn't seem right. I remembered from research I'd done as a teenager some four decades before that the same line had carried ~50K people on 30 full-length trains in the same time period.[541] Each train then had almost exactly the same passenger space as the modern trains. What had happened that only 25 trains could be run where 30 far more crowded trains were run before? Did people get fatter?[542] Did rats eat the switching equipment? It didn't make sense.

One day, I was traveling downtown in the evening rush hour and had to change to the local from the south-bound Lexington Avenue Express at Grand Central Station – the most congested point on the line. I decided to just watch the next express train when it came into the station. Maybe I would see what the trouble was. The train came in, passengers got off, other passengers got on and the train pulled out. My study lasted less than two minutes and I saw what the problem was: When I was a boy and rode on the subway with my parents, Z"L, who were brought up in and near religious homes, I was told something that the people I observed in those two minutes hadn't learned or just didn't practice. My parents said that we have to 'stand aside and let the people off first.'[543] The result was that the people - four

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[534] *Midos* are measures of character & things. By itself, *midos* means character traits. #138 – not in notebook.

[535] Lev. 19:32 "…מִפְּנֵי שֵׂיבָה תָּקוּם, וְהָדַרְתָּ פְּנֵי זָקֵן"
"Thou shalt rise up before the hoary head, and honour the face of the old man,…"

[536] Lev 19:18 see in this sefer :LOVE THY NEIGHBOR: ANTIDOTE TO "THE TRAGEDY OF THE COMMONS"

[537] Deut. 4:15 "Take ye therefore good heed unto yourselves…" see also in this sefer: GUARDIANS OF THE SOUL

[538] See , in this sefer: JUDGING PEOPLE FAVORABLY: ANTIDOTE TO BASELESS HATRED

[539] See in this sefer: SODOM ON THE HUDSON

[540] Some of the results of the City's model of how the tolls would affect travel weren't published. It was clear though, that the main beneficiaries would be the wealthy who remained in their cars on the road. The main losers would be those less well off who'd be tolled off – & transit riders who'd suffer additional crowding. Many environmental advocacy groups – all of the Big Names –got on board the mayor's program despite the spurious claims that poor minority children who suffered from asthma would be benefitted as a result of reductions in air pollution from cars & trucks. However, it came out that the asthma suffered by these children was produced overwhelmingly by sources other than vehicles (incl. smokestacks from building furnaces, smoking, stress & cockroaches) & that there'd be no measurable benefit to these children from this plan. Meanwhile, their poor parents, tolled off the road, would be among the clear losers. For more information on this proposal and some of the contributions to the discussion made by the author, see next footnote,

[541] See PUBLIC & PRIVATE TRANSPORTATION & THE SHAPE OF CITIES with detailed discussion of the issue & primary references, in the author's companion sefer: ובלכתך בדרך [from Dev 6:7 in the Shema – see index].See also in this sefer "JUSTICE, JUSTICE…" PUBLIC TRANSPORTATION AND THE TALIBAN ה GATEWAY TO ECONOMICS, PUBLIC POLICY & HISTORY

[542] US adults did get heavier— increasing from 71 to 81kg betw. 1974 & '05 --~30% of the drop in riders. From Fig. 1-A, NHANES data, in: "The Progressive Increase of Food Waste in America and Its Environmental Impact", K.D. Hall, et al, 11/09, PLoS ONE 4(11) _____

[543] I was also told ~ "Finish the food on your plate. Children are starving in India and wasting food contributes to their starvation." My father, who was actually pronounced dead of starvation when on board ship as a baby, used to clean his plate with bread so that it was not only free of crumbs, but dry [A]. How does wasting food in NYC contribute to starvation in some far off part of the world?

Let's imagine that the price of food at any given time depends directly on the supply—if the supply goes down 2%, the price, in the short run, will go

A. See the author's companion sefer, A SIGN FOREVER – for more on my father and his unusual upbringing.

up 2%. However, this incr. price encourages incr. supply. The net effect is a price incr. of ~1%. [B] A net price rise of 1% increases the mortality rate of children ≤5 in Less Developed Countries by 0.2%. This comes to 15K extra child deaths/yr. [C]. We also have good data on the general-global effects of other specific components of undernutrition on death & disease [D]. As these other parts of the picture correlate reasonably well with the impact of undernutrition on child mortality,[E] we can combine them to get a more complete understanding of the effects of food price changes on general-global health & mortality. We find that a 1% [or 1E-2] real increase in food prices leads to 8.5E4 Deaths & 3.2E6 DALYs [F]. The in-home food waste of the avg. American is ~30% of what they actually consume.[G] Each such person has a 2.95E-10 share of the population of the non-rural world – the part of humanity that's most directly affected by the world price of food commodities.[H] But their share of the food consumed is 1.64x higher because they eat a much greater % of grain-fed meat & dairy.[I] The actual in-home food waste/avg. American in '10 is then 0.3*2.95E-10*1.64 ≈0.1452E-9 of the total food consumed by people in the non-rural world. This will increase the price by ~0.07E-9. Thus, a typical Jew in '10 with avg. life expectancy of 83 [J] – who wastes food at this rate, would, ceteris paribus, be responsible for .05 deaths [K] & 1.9 DALYs [L] in their lifetime.

In the lifetimes of every million Jews in the US today -- or average Americans -- who cut their personal food waste in half, 20,000 deaths and a million DALY's would be prevented among the malnourished of the world.

However, the number of people dying from malnutrition in the mid '50's, when my father told me not to waste food, was 2.90x higher than 2010. [M] – – & the market share of one avg. American was 2.46x higher because the global population was smaller. [N] The impact on others would've been a further 1.58x higher based on the higher relative meat intensity of the American diet then, compared with 2010 [O]. Offsetting this, the % of the population that was part of the global food market – i.e. not in rural areas -- was only 0.63x what it was in 2005.[P] The product of these 4 factors =7.1. Thus the avg. US Jew in the mid-1950s might've been responsible for the undernut. related equivalent deaths of ~1/2 person [0.35 actual deaths & .2[1956] lifetime equivalents of 13 DALY's]. With the many uncertainties of these calculations in both data & methodology [e.g. ranges shown in sub-notes **C & D**], the true value might easily be between 0.2 & 2.

If we used the value of the food wasted – in more fungible & transferable $'s–the avg. American in '56 or '10 who cut this waste in half, could – from these savings alone [~$500/yr.][Q] -- offset the full food deficit [R] of several otherwise hungry people/yr. The ≥$1E11/yr. from this 1/2 of US food waste, would be enough $ to end world hunger. [S]

See in this sefer: **LOVE THY NEIGHBOR: ANTIDOTE TO "THE TRAGEDY OF THE COMMONS" II GATEWAY TO GLOBAL ECOLOGY; also see footnotes 254 & 547 on the mitzvah of not wasting resources "bal tashchis".**

B. In a global study, among lowest & highest income households, a 1% incr. in price for all foods produced 0.91% &.77% decr. in demand, resp. Avg. of these 2 = 0.84%. Table 3 of: "The effect of rising food prices on food consumption…" R. Green, et al, *BMJ*, 6/17/'13, **C.** "A 1% increase in contemporaneous [food] price inflation rate is associated with a 0.2% [SE= +/- 0.1% or 0.1-0.3%] increase in …child mortality [CM] rate [in Less Developed Countries] …all things being equal" Based ~10 yrs. of data on 60+ countries, betw. '00 & '10. From pdf p 18, table 4: "Food Prices and Population Health in Developing Countries: An Investigation of the Effects of the Food Crisis Using a Panel Analysis" Suejin Lee, et al, ADB Econ. Working Pap. #374 , 9/'13, 31p. Under-five deaths [=CM] in 2010 for all causes in Less Developed Countries [LDCs] = 7.516E6. Pdf p.16 "Levels & Trends in Child Mortality Report 2011. UN " . So each 1% actual incr. in price of food for all LDCs the figure is .002*7.516E6=15.03E3/yr. [~1% of global CM undernut. deaths /yr.]. This .002 factor includes the effects of agricultural intensity – and thus, to a significant extent, the rural/urban divide in developing countries. "…when food price …[is] interacted with the log of agriculture, value-added as a percentage of GDP" the factor rises to .009±.003 [pdf p. 22-3, Table 7 **D.** 1.44[1.18=1.71]E6 deaths & 166[140-194]E6 DALY's ["DALYs [Disability Adjusted Life Years] for a disease or health condition are calculated as the sum of the Years of Life Lost (YLL) due to premature mortality in the population and the Years Lost due to Disability (YLD) for people living with the health condition or its consequences.] were attributable to child and maternal malnutrition, Table 3 [incl. Childhood underweight, Vit. A, Iron, & Zinc deficiency & suboptimal breast feeding for deaths & Table 4 for DALY's Added to this are: Diet Low In Fruits 4.90[3.82-5.88]E6 deaths; 104.1[81.8-124.2]E6 DALY's Diet Low In Vegetables 1.80[1.21-2.39]E6 deaths; 38.6[26.0-51.7]E6 DALY's. 1.44+4.90+1.80 = 8.14E6 deaths in 2010 from undernut.; 166+104.1+ 38.6=308.7E6 DALY's in 2010 from undernut.. "A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010", Dr. Stephen S Lim, PhD, The Lancet, V. 380, No. 9859, p2224–60, 15/12/'12 **E.** In 2000, "under 5 mortality" had a .6388 correlation coef. with share or % of total pop. in country "undernourished" – significant at the 99% level; .6535 for infant mortality. $1.00/day income headcount had a .7426 correlation with "under 5 mortality". From: Table 2: Pairwise Correlation Coefficients for 2000 in "Poverty, Undernutrition, and Child Mortality: Some Inter-Regional Puzzles and their Implications for Research and Policy" Stephan Klasen, Dec. '06, Institute for the Study of Labor **F.** Ratio of all undernut. related deaths to undernut. related deaths of children under 5 =8.14/1.44 = 5.653; x 15.03E3=8.498E4 deaths per 1% real incr. in food prices. Ratio of total undernut. related DALY's to total undernut. related deaths 308.7/8.14=37.9; x 8.5E4= 3.22E6 DALYs/ 1% real incr. in food prices. **G.** In '10 of 171.3lb/cap /yr. of the bread, rice and other edible grain based products purchased at retail, only 134.0lb were consumed. Ratio is 1.278 lb./yr./cap. In 1970, the earliest date for which data were available, the ratio was 1.272. For meat, fish, eggs & nuts , the comparable ratios were 1.310 & 1.324 [from USDA "Consumer waste, grains USDA, adjusted for loss, spread sheet." & "Total meat, fish, eggs, and nuts: Per capita consumption adjusted for loss" [click on table of contents in lower left corner of spreadsheet.] Based on this, 1.30 is used for all food at the consumer level in both '10 & 1956. [However, K.D. Hall, et al, found the amount of consumer food waste increasing from 30% in '74 to 40% in 2004. See footnote 542] **H.** .491 urban x 6.9E9 total pop. = 3.39E9; 1/3.39E9=2.95E-10. **I.** adjustment for greater meat intensity of American diet in 2010=1.64. [Americans ate more [beef+pork+poultry] 62.7/19.4 [=3.232] vs. 78.5/38.4[=2.044]kg/cap USA/World 1956/2010 [[Meat Cons./cap. U.S., 1909-2012, (Boneless Wt. Equiv.)Meat Prod. /cap, 1950-2010, World]] USA 1962: 3,100kCal/cap/day;91.2gm prot./day;70.5%animal prot.; [89.5kg meat/yr./cap; 66.0kg grain/yr./cap. Human cons.]; 5.55kg grain used in prod. 1kg meat; World: 2,404kC; 66.0gm; 26.0%; 24.9kg m; 129.2kg grain; 3.55kg grain/kg meat; 562.7kg /yr. grain equiv. USA,/217.6kg World =2.59 = relative share based on grain of one American in 1962 compared with the World. 3.232/2.044 =1.581; = higher relative meat intensity of US compared to world in 1956 compared to 2010; 5.55/3.55 =1.563= higher grain intensity of meat in US compared with World in 1962. This is assumed to be the same in 1956 & 2010 – for want of better data. 2.59/1.581=1.64x = factor of grain intensity of US diet compared to world in 2010. pdf p. 110-12, Table 46, "Population, per capita income, selected food consumption indicators and price ratios, and the grain-meat ratio, by country or region" "Growth In World Demand For Feed Grains: Related To Meat And Livestock Products And Human Consumption Of Grain, 1980" D.W. Regier, USDA, 7/1970. citing as the primary source for calorie & protein data: FAO, UN.1965. "Agricultural Commodities –Projections for 1975 and 1985" V.2, Table A. **J.** "Mortality Differentials and Religion in the United States: Religious Affiliation and Attendance", A.R. Sullivan, J. for the Scient. Study of Relig. V.49, #4, 1/Dec/'10., US life expectancy: '56:69.8 '10: 78.7 **K.** 0.07E-9/1E-2=7E-9; x 8.498E4 [from **F**] x83= .05 deaths. **L.** Deaths x37.9 [from F]=1.9 DALYs; **M.** 1970.5 developing regions U5m 16.71E6=2.44x6.84E6,1970.5- 2010.5; [from "Global and regional under-five and infant mortality rates and deaths, by MDG Regions; Estimates generated by the UN IGME in 2014" downloaded from comp. with 7.516E6 used at C, above] For S. Asia alone – more representative of the area influenced by the mkt economies, as it excludes P. R. of China, 6.17E6 to = 2.72 x 2.27E6 in 1970.5 to 2010.5 , c5m India 4.75E6 1956.5, 4.46E6 1970.5; = 2.84x 1.57 2010.5; 4.75=3.03x1.57, 4.75=1.065x4.46; 1.065x2.72 = 2.90 from c5r & c5d – same source. **N.** The global pop. 6.9E9 in '10=2.46X 2.8E9 ('55-6). **O.** The Global % Urban in '05 [the central yr. of Lee's study, noted at C, infra]: 49.1 & in '55: 31.6. [0.644] U.N. Pop. Div., *World Urbanization Prosp.* ,'14 Rev, file 2. **P.** See calc. at 'I', supra. **Q.** $400/yr. [2010$] in '56, in USDA. This incl. both 'at home' & 'away from home'., "The Estimated Amount, Value, and Calories of Postharvest Food Losses at the Retail and Consumer Levels in the United States" J.C. Buzby,et al . USDA 2/2014 Consumer food loss in '10 was 9.2% of $4,016, not incl. the incr. value of purchased processed foods, bread, pizza, etc in or out of home.. **R.** ≤$100/cap. for ~1E9 pop., J. Diouf, UN FAO, Rome, Jn/3/'08 **S.** See, e.g., "Food Wastage Footprint, Full cost accounting, Final Report" UN FAO *'14.*

decades before -- got off the train in two streams at each door of each train car. That's the way the train was designed.[544] What I saw

[544] Transit Capacity and Quality of Service Manual, Pt 3, Rail Trans. Cap., pdf p. 29 & 31. Doors are 1.37m – the upper bound of a "2 stream" door.

in my two minute study was that the people on the platform were crowding around the doors. Passengers coming off could only get out slowly in singlefile streams. With people getting off and on the train at less than half the speed the system was designed for, the throughput limit of trains per hour was reduced from 30 to 25 – even with 40% fewer riders. Also, the train travel time increased –with delays at each crowded station along the route.

Why are people crowding around the doors – aside from the fact that they did not have such wonderful parents to teach them properly when they were little? They feel that by being among the first to get into the car, they'll have a better shot at getting a seat. They don't judge their fellow riders favorably. They assume that, if they're tired or carrying extra bundles – or just want to read a book sitting down – that no one who is less burdened is likely to get up for them. They believe their fellow riders won't even get up for an older person. They assume that those with seats will stay in them – even if they see someone who could clearly use it more. They feel, in short, "love thy neighbor as thy self" doesn't apply here. They also assume – though few would know to put it in such words – that the people on the subway – themselves included -- have 'midos S'dom.' They think people will say – to themselves: "What's mine is mine and what's yours is yours" – and won't get up for a more needy person.

What's the solution here? How can we expand space-time on the subway? In the long run: better education of the children and newcomers in *midos tovos*.[545] In the short run: a subway advertising campaign with the theme: "**FOR A FASTER RIDE, PLEASE STAND ASIDE.**" [546]

Technology can also help here and is already making a difference. The eBook readers make it more convenient to read a book or newspaper in very little space while holding on with one hand. Personal stereos make the ride more enjoyable – despite the crowding – and iphones that can be operated with one hand make time on the subway more productive.[547]

Whatever the level of technology, midos tovos and "love thy neighbor" make more space and time for everyone – as we learn from the story of the Beis Hamikdash – that there was just enough room for the great throngs that came on Yomtov when they were standing up – and still just enough room –no crowding –when they all bowed down before Hashem[548]. Humility before Hashem makes time and space for everyone – on the subway or in the Courtyards of the House of God.

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[545] See in this sefer **'And Their Cry Came Up To God'** & **'Physical Characteristics Of A Spiritual City'** in the author's companion sefer: ובלכתך בדרך.

[546] The cost of such a campaign would probably be ~$10E6--using primarily subway based media. This is <0.1% of the cost of the new 2nd Ave. subway – a line expected to add room for ~20,000 new riders and that will take over a decade to build. The people on the Lex. Express alone lose several million $/yr. from slower service before the effects of increasing frequency from 25 to 30 trains/hr. The benefits that would accrue to the existing peak period riders from the combination of "for a faster ride …" and adding the new service that would bring the frequency up to 30 trains/hr. are comparable to the capital costs of adding the new service. These capital costs are ~1/10th of the capital costs/new rider of adding equivalent peak period capacity on the 2nd Ave subway: ~$4E8 compared with ~$4E9 for 6E3 pass/hr.

[547] There is also the **Personal Reader™** -- under development by the author. It will enable one to read page-size, virtual images with eyes relaxed [@ ~+0.5D] & both hands free -- even where it's too crowded to read eBooks. It can also be used to read in the dark without disturbing others nearby. The 50gm, shirt-pocket size, bi-ocular system works by directing "scientifically tailored image forming light right into the viewer's eyes". It, in effect, expands the energy-space-time for reading & takes *bal tashchis* – not wasting resources – to the level of optical system design. It incorporates physical -- man-made -- economies in the device optics that dovetail with the natural -- God made -- economies of the human visual system. **See pdf p 42-3 of "The Effects of Habitual, Short, Distance Viewing Breaks During Reading On the Advance-ment of Myopia in Reading Intensive College-Age Men"3/10/21** https://s18798.pcdn.co/winawerlab/wp-content/uploads/sites/2136/2021/03/Myopia-Adler.pdf **Footnote 41, supra, SID Meeting, Dresden 3/13-14/'17, pdf p. 12 _____ & also App F. in author's sefer: ובלכתך בדרך**

[548] Perkei Avos 5:8 [5:7 in some versions]. There is also a related idea from the Talmud, Sanhedrin 7a:

ההוא דהוה קאמר ואזיל כי רחימתין הוה עזיזא
אפותיא דספסירא שכיבן השתא דלא עזיזא רחימתין
פוריא בר שיתין גרמידי לא סגי לן

"*When love was strong* [betw'n husband & wife or betw'n God & Israel] *we could've made our bed on [the side of] a sword-blade; nowthat our love has grown weak, a bed of 60* [cubits] *is not large enough for us.*"

See in this sefer: **City Sound-Space: Local Pastures With Global Impacts; An Original Doctor Joke** [on life in the very crowded Torah city of Bne Braq, Israel]; **Righteous Prices In The Wilderness And City**

RIGHTEOUS PRICES IN THE WILDERNESS AND CITY

II Gateway to Desert Ecology & Urban Design[549]

Approaching the Promised Land after nearly four decades of wandering, we came to the border of Edom and requested permission to pass through. When our initial request was refused, we added something to sweeten our proposal. We said we'd pay the full, "righteous" price …רַק אֵין-דָּבָר … for the water that we would drink on the way – even the seemingly free water of rivers in the Edomite upland wilderness[550]. Our offer was refused. Instead, the Edomites threatened to attack us with the sword if we even entered their land.

Though the Edomites here showed their inhospitality – and their lack of the sign of kindness that should characterize the true spiritual descendants of Avroham Avinu -- the Jewish people didn't suffer as a result[551]. Still, this episode raises some important questions: A. What should be the full "righteous" price of "free" water? and, B. Are there other "free" things in our society today that we – as righteous people – should be paying for but don't?

Upland river water coursing through a wilderness may seem to be ownerless and therefore, free for the taking. It's not. In almost any land – but particularly in a land like Edom where rainfall and water are scarce – even remote mountain streams may have critical value. They feed the lowland fields and support grazing. They also affect the water table and with it, the amount of water that collects in wells. The full "righteous" price of the upland wild river water will include the cost to the low-landers of buying food from neighboring lands – food they couldn't grow themselves because there wasn't enough water. But if the demand for food in neighboring lands increases, the price of food in those lands will also rise. The full righteous price must include the effects of such price increases on the wellbeing of the neighbors of Edom as well. In the short run, where many are living at a bare subsistence level, the sudden increased use of wild upstream water could mean actual starvation to those who couldn't pay the higher price. To avoid any such problems, the food would have to be imported at considerable expense from more distant areas that have a food surplus.

In modern societies there are some things that appear to be free but, like that upstream river water, actually have a high righteous price. When we just drive through the local streets in our big city centers there's a hidden cost directly analogous to the use of Edom's upstream water[552]. The 'free' air above those streets is actually used as an open sewer for the poisonous exhaust of our car[A]. The result is that it would be very expensive to cover the streets with all-weather, sky lighted concourses and al-fresco park-walks. The true cost of having the air above our streets used as open sewers -- the opportunity costs of the space on and above the streets –is roughly $1/vehicle mile for the typical fume spewing car.[553]

If we thought about paying this full righteous price, we'd quickly discover ways of making our cities more livable. We'd use light weight, zero pollution, space efficient cars. We'd eliminate grade crossings for both people and vehicles and we'd have readily accessible utility galleries. We'd get people and goods where they needed to go even more quickly, cleanly and safely than today – and at lower cost[554].

Righteous prices applied to our limited resources wouldn't only reduce waste directly. They'd displace <u>unrighteous</u> charges[555] – spreading righteousness through our whole society– like water that nourishes an arid land[556].

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[549] See in this sefer: **LOVE THY NEIGHBOR: ANTIDOTE TO "THE TRAGEDY OF THE COMMONS" II GATEWAY TO GLOBAL ECOLOGY; HOPE II GATEWAY TO HYDROGEOLOGY**

[550] **Bam. 20:19** "And the children of Israel said unto him: 'We will go up by the highway; and if we drink of thy water, I and my cattle, then will I give the price thereof, there is no hurt […רַק אֵין-דָּבָר …]; let me only pass through on my feet; '" **The highlighted words mean the full righteous price – where none are harmed.**

[551] **They continued to receive the water from a rock and the manna from Heaven.**

[552] **There are also obvious costs: congestion and general air pollution – pollution that affects the whole area.**

[553] **Calc. by the author based on $500+/month near-street commercial parking rates in mid-Manhattan in '12.**

[554] **Insights on urban redesign originally published by the author as "Urban Travel Economic Costs" p76, <u>Proceedings of the Specialty Conference on Urban Transportation Efficiency</u>, New York, N.Y., July 26-27, 1976.**

[555] **<u>Unrighteous</u> charges incl. those that aren't related to benefit or which involve major invasions of privacy.**

[556] **Inspired in part by meeting the brothers B.& R.G., creators, with their father & other family members, of world renowned, high quality, mixed use urban malls.**

A. It's also an open sewer for car noise. See in this sefer: "CITY SOUND-SPACE: LOCAL PASTURES WITH GLOBAL IMPACTS"

THE DIMENSIONS OF WISDOM

In Perkei Avoth – Ethics of the Fathers – we have a comparison of two of Rabbi Yochanon ben Zakkai's students with:

כל חכמי ישראל-

***"all of the sages of Israel"-* We read:**

הוא היה אומר, אם יהיו כל חכמי ישראל בכף מאזניים, ואליעזר בן הורקנוס בכף שנייה--מכריע את כולם. אבא שאול אומר משמו, אם יהיו כל חכמי ישראל בכף מאזניים ואליעזר בן הורקנוס אף עימהם, ואלעזר בן ערך בכף שנייה--מכריע הוא את כולם.

[Rabbi Yochanon] used to say: If all the sages of Israel were to be in one hand of a balance-scale, and Eliezer the son of Hurkenus were in the other, he would outweigh them all. Abba Shaul said in his name: If all the sages of Israel were to be in one hand of a balance-scale, Eliezer the son of Hurkenus included, and Elazar the son of Arach were in the other, he would outweigh them all.[557]

This presents an apparent contradiction. How can the two chachamim, Eliezer and Elazar, both outweigh all other chachamim – including each other? Some resolve this by saying that it was true for each at a different time: First Eliezer outweighed them all and then Elazar – who is described in the previous Mishnah as:

מעיין המתגבר -

'an ever-increasing wellspring'

grew to exceed Eliezer. Some also use this Mishnah to explore the relative merits of two modes of learning -- the broad, comprehensive and retentive mode of Eliezer -- who is described in the previous Mishnah as:

בור סיד שאינו מאבד טיפה

***'a cemented cistern that loses not a drop'*,**

and the creative mode of Rabbi Elazar.

The Bartenura[558] takes a different approach. He says both are simultaneously true: there are two balances, each measuring a different dimension of wisdom.[559] However, in the preceding Mishnah where the characteristics of Eliezer and Elazar are given, they are, respectively, the first and last of five of R. Yochanon ben Zakkai's students. Each of the middle three students, as we'll see, is also described as having a special, חָכְמָה -- wisdom:

יהושוע בן חנניה, אשרי יולדתו; יוסי הכוהן, חסיד; שמעון בן נתנאל, ירא חטא...

…Joshua the son of Chananya---fortunate is she who gave birth to him; Yossei the Kohen---a *chassid* (pious one); Shimon the son of Nethanel fears sin…

The first of these–who brought special joy to his mother - excelled in wisdom related to Respect & Love For Parents And Family Life. The next, and central among the five, is called חסיד. He had the special wisdom of חסד – Kindness - so central to Torah[560]. The third has ירא –Awe- the wisdom that comes from Awe of God[561].

Perhaps we're seeing here a short way of saying that all five students would "outweigh them all**" in their particular dimension of Wisdom. It isn't a contest for who's best, but a recognition that Wisdom of the Torah is not one dimensional. All five qualities in which these students "**outweigh them all**" are key dimensions of Torah Wisdom.** [CONTINUED NEXT PAGE]

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[557] Some sources show this as Avoth 2.11, in others, Avoth 2.9 ____

[558] Ovadiah ben Avraham Yare of Bartinoro c. 1445CE–before 1515CE, Rishon in Italy & Israel, classic commentator on the Mishna

[559] לא נחלק על ת"ק, ושני הדברים אמרם רבן יוחנן בן זכאי, ושניהם אמת, דלענין הבקיאות, והזכרון היה רבי אליעזר מכריע, ולענין החריפות והפלפול היה רבי אלעזר בן ערך מכריע.

[560] **A.** See in this sefer: **The Color Of Kindness** & **'The essence of Torah is kindness...'**, quote from the Chofetz Chaim.

B. Like R. Yossei, the Chofetz Chaim, who said 'the essence of Torah is KIndness',* was a Cohen. The Cohanim today say the priestly blessing during certain regular prayers when there is a minyan. The blessing, [Bam. 6:24-6] is:

יְבָרֶכְךָ יְהוָה, וְיִשְׁמְרֶךָ.

יָאֵר יְהוָה פָּנָיו אֵלֶיךָ, וִיחֻנֶּךָּ; יִשָּׂא יְהוָה פָּנָיו אֵלֶיךָ, וְיָשֵׂם לְךָ שָׁלוֹם.

'May G-d bless you & guard you.'May G-d shine His countenance upon you & be gracious to you. 'May G-d turn His countenance toward you & grant you peace.'

Before this, another blessing is recited: "R. Zera [רבי זירא, Amora in Eretz Yisroel] said in the name of R. Hisda [רב חסדא ,Cohen & 3rd gen. Bab. Amora, d.~320CE]: "[Blessed art Thou,...] Who commanded us with the sanctity of Aaron & commanded us to bless Thy people Israel in love'.

לברך את עמו ישראל באהבה [Sotah 39a].

Almost all other blessings we recite before a mitzvah don't incl. 'in love - באהבה'.** So why do Cohanim recite it here? Maybe, when Cohanim stand before the people & recite … יְבָרֶכְךָ יְהוָה , they may come to think of themselves as superior to the people they're blessing & become haughty. With 'in love' just before the blessing, they're reminded of the centrality of 'Love thy neighbor as thy self' [Lev 19:18], They're also reminded: *'...Be like the sudents of Aharon [ha Cohen], love peace & pursue peace, love All People & bring them closer to Torah.* אוהב שלום ורודף שלום אוהב את הבריות ומקרבן לתורה... ' [Avos 1:12] We should not only love peace but persue it; not only love Jews – but to love All People – & bring All People closer to Torah -- the ways of God.

This should also remind all Jews that, as a '...Kingdom of Priests & a Holy Nation'...מַמְלֶכֶת כֹּהֲנִים, וְגוֹי קָדוֹשׁ: [Ex19:6] & '...light to the nations ...לְאוֹר גּוֹיִם. [Is 42:6], their relationship to non-Jews should be like Cohanim to all Jews – a relationship of blessing based on love - not arrogance, etc. ****

But what is love in this context? Rabbi S. R. Hirsch [1808–88] at its 1st appearance in Torah [Gen 22:2], says it derives from הב "give". Rabbi Eliyahu Dessler, [1892 –1953] -one of the greatest Mussar teachers of the past century- also says love in Torah is based on giving- citing a statement of our Sages of the Talmud. *** But the love at the center of Torah –[Lev. 19:18]- doesn't appear to be based primarily on giving: it habituates us to act toward the physical resources we have in common as we'd want others to act toward those same resources. Out of these repeated physical actions – not just thoughts & feelings – we become concerned for-- to love—others as ourselves.*****

* See footnote 388. ** The brocha just before Shachris Shema also ends in באהבה . ____

*** Up to here, inspired by R. Mordechai Machlis; said 1st time in his home, Maalot Dafna, Jerus. Repeated, Zichron Moshe Shul, same night 29 Siv/5776, with strong approval

**** a. This etymological association with 'give' is not the usual etymology of the classical Hebrew commentators – like Radak. b. R. Dessler doesn't cite R. Hirsch or show show any etymolgical connection: In his essay on kindness,[V.1,p.36 מכתב מאליהו /part 1, p. 127, 'Strive for Truth', Engl. Trans. by his student, R. Aryeh Carmell], he cites: c. Derech Eretz-Zuta ב 'If you want to secure your fellow's love, always consider what is good for him. אם חפץ אתה להידבק באהבת חברך, הוי נושא ונותן בטובת. d. Leading scholars say Derech Eretz-Zuta, ג - א "roughly dates back to Tannaitic times [~10-220CE]." Marcus van Loopik, p. 9, "The ways of the sages and the ways of the world: minor tractates of the Babylonian Talmud: Derekh 'Eretz Rabbah, Derekh 'Eretz Zuta, ..." 1991, citing: L. Ginzberg, M. Higger, D. Sperber & P. Rubanov. e. Sometime betw. '013 & '014, I was told by my friend, Heidi Elisabeth, that giving is key to Torah love, & after thinking of 560-B, was inspired to find these refs. *****See:'LOVE THY NEIGHBOR' & 'THE LIGHTHOUSE'

[561] ראשית חָכְמָה, יִרְאַת יְהוָה… *"The Awe [also trans. Fear] of the LORD is the beginning of wisdom…"* Ps. 111:10

It also reminds us that Torah Wisdom – with Kindness at its center– is itself the center of all wisdom. That kindess is at the center of Torah wisdom isn't only to show the centrality of kindness but also shows that Kindess itself needs to be centered & bounded. Its immediate boundaries: the wisdoms of Family Life & Fear of Sin -- remind us that a lack of such boundaries can lead to perversion. [562-A]

We say the seven branched menorah represents the structure of all Wisdom. Torah Wisdom is at the center -- served by six supporting wisdoms -- the wisdoms needed, for example, to build and operate the Mishkan [562-B]**.**

That the menorah is cast in one piece – and not assembled from separate parts – shows the ultimate unity of all wisdom however distinct the parts may sometimes appear. It's only when Torah Wisdom with all its inherent dimensions is united with the supporting "worldly" wisdoms that we have a viable world of learning, teaching and Living Torah.

[562-A] .1 We see this with family life at Lev. 20:17. Amid a list of forbidden relations between men, women & animals, we have:

וְאִישׁ אֲשֶׁר יִקַּח אֶת אֲחֹתוֹ בַּת אָבִיו אוֹ בַת אִמּוֹ וְרָאָה אֶת עֶרְוָתָהּ וְהִיא תִרְאֶה אֶת עֶרְוָתוֹ חֶסֶד הוּא וְנִכְרְתוּ לְעֵינֵי בְנֵי עַמָּם עֶרְוַת אֲחֹתוֹ גִּלָּה עֲוֹנוֹ יִשָּׂא:

"And a man who takes his sister, whether his father's daughter or his mother's daughter, and he sees her nakedness, and she sees his nakedness it is a disgraceful act, and they shall be cut off before the eyes of the members of their people; he uncovered his sister's nakedness; he shall bear his sin."

The word that, based on our mesorah, is translated here as *'a disgraceful act'*, is identical to the word - חֶסֶד – *chesed* – that, with its variants, is otherwise translated as kindness –240 times-- in TeNaCH.

.2 A couplet in Perkei Avos 5:10, focuses on this distinction:

האומר...שלי שלך ושלך שלי, עם הארץ. שלי שלך ושלך שלך, חסיד

"...*One who says... "What is mine is yours, and what is yours is mine" is a boor. One who says, "What is mine is yours, and what is yours is yours" is a chassid (pious person)."*

The real Torah Chassid gives but doesn't take. The unbounded chassid – not centered in Torah – gives & takes – without bounds – as the brother *"takes his sister"*. The unbounded chasid lacks the limits that come with the wisdoms of Family Life & Fear of Sin. They could 'progress' from offering food to strangers to offering their 'nakedness' & then to compelling others to do the same – because it's seen by them as good for all. This is the basis for some ideologies & cults – leading to mass murder when 'kind' compulsion is resisted.

.3 This is perhaps a meaning of the expression at Prov. 14:34:

צְדָקָה תְּרוֹמֵם־גּוֹי וְחֶסֶד לְאֻמִּים חַטָּאת:

"Charity will elevate a people, but the kindness of the nations is sin."

Here, 'a people' refers to Israel. In the 2nd clause, as Rashi notes: the idolatrous *'nations' rob one to give another.* Alternatively, as Chazal say at Bava Basra 10b, idolatrous blasphemers - like Nebuchadnezzar-- may perform charitable deeds to extend their rule. [citing Daniel 4:24]

.4a Related ideas on chesed without boundaries:

כל שהוא רחמן על אכזרים לסוף נעשה אכזר על רחמנים ...

Whoever is kind to the cruel is being cruel to the kind.

"*But Saul and the people spared Agag.....*וַיַּחְמֹל שָׁאוּל וְהָעָם עַל-אֲגָג" resulting in Agag having a child from whom the Amalekite, Haman, was descended. [Yalkut Shimoni, Sam. I, 121 /1 Sam. 15:9]

.4b רבי שמעון בן לקיש אומר: כל מי שנעשה רחמן במקום אכזרי סוף שנעשה אכזרי במקום רחמן

"...One who becomes merciful where they should be cruel will ultimately become cruel where they should be merciful, as it is written, Kohelet Rabbah 7:16. "And Nov, the city of priests, he smote with the edge of a sword" (I Sam 22:19)

[562-B] E.g., 'wise' & 'wisdom' are each mentioned 8X in making the Mishkan & Holy Garments: Ex.28:3; 31:3,6; 35:10,25,26, 31,35; 36:1,2,4,8. The idea of Torah at the center of six supporting wisdoms, with all tightly bound together is derived from Num. 8:2 – on lighting the Menorah (see.g.: Netziv, Ha'emek Davar). The 6 supporting wisdoms might be:

1. **Mathematics and Logic**, [used in Mishkan where anything is counted, measured or compared – including time, space, material objects & people][See footnote 190-K]
2. **Physics & Chemistry** [where weight, illumination, fluidity & mechanics are considered, calculation of times for prayers & orientation of mishkan in space, properties of materials are important – strength of pure gold; the chemical resistance of the sapphire/lapis Lazuli luchos; baking bread with & w/o leven Ex 25:30]
3. **Biology & Medicine** [fitness of Cohanim Lev 21:17; kashrus of animals 1:3; parts of carbonos, diagnosis of apparent biological conditions, eg: tsoraas Lev 13:2, 14:3, Deu 24:8]
4. **Music & Aesthetics** [shofar Lev 25:9; trumpets Num 10:4; bells Exd 28:34, 39:26; songs, colors, fragrances 30:23, 30:34, 35:8, 37:29; & general design]
5. **Languages & Communications** [the words of the Torah – incl. those written on the clothing of the Cohen Gadol: shoulder pieces Ex 39:6; breastplate stones 28:29; & the plate worn on the forehead 28:36, 39:30 pronouncements of the priests, tribal banners & names].
6. **Geography and History** [The orientation of the Mishkan on the land [Exd 26:18,36:23; how we encamped around it Num 2:3; where & when we traveled in the Midbar; recounting events & their locales. Num 33:1-50; the borders of the Land of Israel Num 34:3-12. These are just a small sample of such verses]

When these wisdoms are on their own – not centered on Torah – we have an interesting allusion in Midrash Kohelles Rabbah [aleph-zayin–he] to what we might expect:

אילו נתן הקב"ה חכמה לטפשים היו יושבין והוגין בה בבתי כסאות ובבתי תיאטריאות ובבתי מרחצאות. אלא נתן הב"ה חכמה לחכימין והם יושבין והוגין בה בבתי כנסיות ובבתי מדרשות

If God gave Wisdom to fools, they'd meditate on it in toilets, theatres & bathhouses. If God gave wisdom to the wise, they'd meditate on it in synagogues & houses of study.

The above text is from manuscript א on p. 6/13, line groups 6-7 and p. 7/13 line group 1, of the critical text found at _____On p. 9/13 line groups 5- 6, manuscript מ has quite a different version in a different place: [Both translations are by the author.]

אילו נתן חכמה לטפשין והם יושבין בבתי קרקסיאו' ובבתי מרחצאות אלא הב"ה נתן חכמה לחכימין והם יושבין בבתי כניסיות ובתי מדרשות

If wisdom were given to fools they would sit in the circuses and bathhouses. / If God gave wisdom to the wise, they would sit in the synagogues and houses of study.

THE FOUNDATIONS OF THE WORLD[563]

We learn that העולם --The World -- stands of three things:

על שלושה דברים העולם עומד, על התורה ועל העבודה ועל גמילות חסדים.

…on the Torah, the service of G-d, and deeds of kindness.[564]

[PERKEI AVOS 1:2]

But how exactly does this work? Should we take this only as a metaphor or, at best, an exaggerated statement of how important these three things are? Or is there some clear way that 'The World' really stands on these three things?

If we take 'The World' to mean the world of humanity and if we take "stand" to mean 'continues in peace' then there is a clear, observable, non-metaphorical way that these three things sustain the world.

The opposite of humanity continuing in peace is global warfare – of the kind we had a good taste of with the First and Second World Wars. Such conflagrations don't spring fully formed out of an otherwise peaceful land. They grow out of a multitude of smaller conflicts. These, in turn, are produced from vast numbers of still lesser disputes . There is a systematic relationship between the number of deadly quarrels involving a single victim -- what we usually call murder -- and deadly quarrels with scores of millions of victims – World Wars.[565] However, individual murders are not the lower limit of human conflict. Murders – like

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563 **This was conceived after attending an event at Cardozo School of Law on the DNA-based exoneration of the defendants in the Central Park Jogger Case [A]. Cardozo Prof. Barry Scheck uses the expression "provably innocent" to describe such exonorees. From my work on the Taliban [B] and personal experience with the NYPD [C], it occurred to me that "provably innocent" could be extended in two directions: to war – as murder writ large – where whole nations are falsely accused; and to "murder writ small –where time is wasted – murdered -- by a provably false petty accusation. I was thinking of this continuum -- this pyramid-- of innocence & violence -- from the micro to the macro & also about ribosomes that catalyze the making of protein according to a genetic plan[D]. Could the tent of Avraham and Sarah be like such a ribosome–making self-perpetuating acts of kindness according to a Torah Plan? What about a pyramid of kindness? Pyramid: image of stability: tripod – on which the world stands…**

A. Five young men were falsely accused of rape & attempted murder.[4/'89] They each served terms ranging from 5 to 11.5 years before being exonerated on the basis of DNA testing.

B. See, in this sefer "JUSTICE, JUSTICE .." PUBLIC TRANSPORT AND THE TALIBAN

C. I was arrested on a provably false accusation – and found not guilty.

D. The ribosome metaphor was inspired by the work of Prof. Ada E. Yonath and Colleagues at the Weizmann Institute in Israel. The work of her group, including some remarkable simulations of ribosomes in action, may be seen at their website: _____

564 See, in this sefer: GEMILUS CHASADIM …"CAMEL KINDNESS" Π GATEWAY TO LIFE SCIENCES AND SUSTAINABLE LIVING

565 Lewis Fry Richardson, Statistics *Of Deadly Quarrels*. (1960).419 pages, Pacific Grove, CA: Boxwood Press

great wars -- also don't arise out of an otherwise benign social landscape[566]. We can see that the scale of conflict and quarrels goes from global catastrophes, through individual murders to non-lethal fights and robberies. From there the pattern continues until we get to the personal slights, thoughtless words and offensive expressions that set people off against each other. It is this sort of choice -- between a pleasant greeting[567] and the lack of one -- that sits at the opposite end of a system that leads to global self-destruction.

It is as though there were a vast pyramid: at the top of the pyramid is a single global conflict – the destruction of the world, God Forbid. At the base, there are literally billions of what could be genuinely pleasant greetings – or their opposite. If 'their opposite' forms the base of the pyramid, the top of the pyramid will be sustained. If the pyramid's base is 'genuinely pleasant greetings' then the pyramid of violence will vanish and be replaced by its opposite – Global Peace.

So, this is how *'Torah, the service of G-d, and deeds of kindness'* sustain the world: The Torah, with its 613 points of definition and support – connecting us with our sages across time and space -- is combined with The Services – the special prayers we say – to cultivate humility and build attachments to God. These two pillars give us the capacity as a community and as individuals to create the third pillar: sustainable acts of kindness. We become producers -- multipliers -- of such kindness and absorbers of its opposite.

Starting from a strong base – our בַּיִת-- Bayis -- our Torah centered, prayer filled homes -- we follow the example of Avraham and Sarah, inviting guests and giving these guests the power to do kindness to others. From that same Bayis we go out – as it is written: ובלכתך בדרך *'as thou goest by the way'*[568]-- and, wherever we go, we neutralize the negative words and tensions that we find and fill the world with:

גמילות חסדים.

[SEE FOOTNOTE 492, SUPRA]

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[566] **The linkage between kindness and the prevention of murder is shown in Deut. 21:1-9. This, the parsha of the Eglah Arufah, shows what we must do "*If one be found slain in the land.*" The elders of the nearest town declare that their hands did not shed this blood – that they gave proper care and hospitality to the victim. R. Shmuel Yerushalmi [Me'am Loez- Moznaim] extends this to the treatment of the unknown murderer (perhaps based on an alternate reading of Sotah 45a – as cited in the Soncino edtion at note 27) R. Yerushalmi points out that Eglah Arufah immediately follows a chapter on the laws of war and siege. This links war to murder and to acts of kindness.**

[567] ***'…receive every man with a pleasant countenance.'*** **Perkei Avos 1:15;**
"… Be first to greet every person…"**[Perkei Avos 4:20]. See also in this sefer: SOUND-SPACE: LOCAL PASTURES WITH GLOBAL IMPACTS. Also, see footnote 316-B – about The Guardians of The City.**

[568] **Deut. 6:7 – part of the Shema. See the author's sefer of the same title – which is about applying Torah in public life – from the local to the global.**

FROM THE MOUNTAINS OF ARARAT TO THE TOP OF PISGAH

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אומרים שבעים

FROM THE MOUNTAINS OF ARARAT TO THE TOP OF PISGAH

II GATEWAY TO CLIMATOLOGY, COSMOLOGY AND GEOLOGY

PART 1

THE FLOOD

INTRODUCTION

Looking west toward the Land of Israel from near the TOP OF PISGAH , MOUNT NEBO

In the last chapter of of the last parsha of the last book of the Chumash, we have:

וַיַּעַל מֹשֶׁה מֵעַרְבֹת מוֹאָב, אֶל-הַר נְבוֹ, רֹאשׁ הַפִּסְגָּה...
"And Moshe went up from the plains … to Mount Nebo, the top of Pisgah…"[569]

From there, about half a mile above sea level, he was able to see much of the Land of Israel – some places more than 50 miles away.[570] In a dozen other places in Chumash alone, the Torah speaks of Moshe and others ascending to the top - רֹאשׁ - of different mountains and hills – including Mount Sinai and Mount Hor.[571]

In Parshas Noach, the tops of mountains are also mentioned and some mountains are even named: הָרֵי אֲרָרָט -- Mountains of Ararat**, but no mention is made in that parsha of anyone going to or from the top of any mountain.**

THE USUAL VIEW

MOUNT ARARAT IN SUMMER FROM THE AIR

However, the usual understanding of the parsha has the Ark landing on the top of a mountain – Ararat – from which, presumably, Noach and his family and all of the great many creatures with him in the Ark would have had to descend. But the top of the mountain that's known by that name

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[569] Deut 34: 1-3 וַיַּעַל מֹשֶׁה מֵעַרְבֹת מוֹאָב, אֶל-הַר נְבוֹ, רֹאשׁ הַפִּסְגָּה, אֲשֶׁר עַל-פְּנֵי יְרֵחוֹ; וַיַּרְאֵהוּ יְהוָה אֶת-כָּל-הָאָרֶץ אֶת-הַגִּלְעָד, עַד-דָּן. וְאֵת, כָּל-נַפְתָּלִי, וְאֶת-אֶרֶץ אֶפְרַיִם, וּמְנַשֶּׁה; וְאֵת כָּל-אֶרֶץ יְהוּדָה, עַד הַיָּם הָאַחֲרוֹן. וְאֶת-הַנֶּגֶב, וְאֶת-הַכִּכָּר בִּקְעַת יְרֵחוֹ עִיר הַתְּמָרִים--עַד-צֹעַר.

[570] Provide topographic map showing where Moshe could see based on today's topography and give some sense of how that topography might have changed over ~3400 years.[This map can be on another page.] [See footnote 671 on calculating distance to the horizon from a given height.]

[571] Exod. 17:9 ... נְצָב עַל-רֹאשׁ הַגִּבְעָה... ... *stand on the top of the hill*...; Exod. 17:10 עָלוּ רֹאשׁ הַגִּבְעָה... ...*went up to the top of the hill* ; Exod. 19:20 ...אֶל-רֹאשׁ הָהָר... ... *to the top of the mount* [Sinai]...; Exod. 34:2 ...עַל-רֹאשׁ הָהָר. ...*on the top of the mount;* Num 14:40... וַיַּעֲלוּ אֶל-רֹאשׁ-הָהָר... ... and got *them up to the top of the mountain*... ; Num 14:44... אֶל-רֹאשׁ הָהָר... ...*to the top of the mountain*...; Num 20:28... בְּרֹאשׁ הָהָר ... ...*in the top of the mount* [Hor]...; Num 21:20... רֹאשׁ הַפִּסְגָּה ... ... *by the top of Pisgah...;* Num 23:9 ... מֵרֹאשׁ צֻרִים ... ...*from the top of the rocks*...; Num 23:14... אֶל-רֹאשׁ הַפִּסְגָּה...; Num 23:28... רֹאשׁ הַפְּעוֹר ... ...*unto the top of Peor*...; Deut 3:27... עֲלֵה רֹאשׁ הַפִּסְגָּה *Get thee up into the top of Pisgah*...; with many more in the rest of Tenach. In each of these the word רֹאשׁ is used for top.

today is 2.5 miles above much of the surrounding plain, is perpetually covered in snow and ice[572] and is so steep and treacherous that it is a challenge for an experienced mountain climber with ice axe and crampons[573]. At more than three miles above sea level, it's even difficult to breathe[574]. What value would Hashem – our merciful God -- have in depositing the righteous Noach and those with him in such a forbidding and dangerous place? [575]

WHAT THE TORAH ACTUALLY SAYS

A closer look at the actual words of the Torah in Parshas Noach shows that the usual understanding doesn't appear to be the pshat[576]. The Torah actually says:

וַתָּנַח הַתֵּבָה בַּחֹדֶשׁ הַשְּׁבִיעִי, בְּשִׁבְעָה-עָשָׂר יוֹם לַחֹדֶשׁ, עַל הָרֵי אֲרָרָט.

And the ark rested …upon the mountains of Ararat. GEN. 8:4

The Torah doesn't say that the Ark rested on the top or on the peak or even on the top of a foothill of Ararat – only somewhere on the mountains – in the plural – somewhere, which could even include a relatively flat area near their base.[577]

If the Torah does not actually say that the Ark rested on the top of Ararat – or the top any other mountain – why should anyone think that it did? The answer lies in the description of the Mabul – the Deluge – in the previous chapter: [GEN. 7:19-20]

וְהַמַּיִם גָּבְרוּ מְאֹד מְאֹד--עַל-הָאָרֶץ; וַיְכֻסּוּ כָּל-הֶהָרִים הַגְּבֹהִים אֲשֶׁר-תַּחַת כָּל-הַשָּׁמָיִם. חֲמֵשׁ עֶשְׂרֵה אַמָּה מִלְמַעְלָה גָּבְרוּ הַמָּיִם; וַיְכֻסּוּ הֶהָרִים.

…and all the high mountains [578-A] that were under the whole heaven were covered. [578-B] Fifteen cubits upward did the waters prevail; and the mountains were covered.

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[572] The temp. drops ~6.5°K /km from what it would be at sea level. At 5.137km would be ~33.4°K colder.

[573] Early accounts of the ascent and descent of "Ararat" show that the local people – who had no difficulty reaching the snow line in summer, wouldn't go higher. See:*"The Ascent of Mount Ararat in 1856"* by R. Stuart, Proc. Royal Geog. Soc. p 77-92 V. 21 1876-7. _____"Transcaucasia and Ararat",J. B. Bryce 1877,420+p. _____ In contrast, the Incas summited much higher mountains, incl. 6,739m Mt. Llullaillaco – tho' the route to its peak is ~snow free. "Sacred Mountains, Ceremonial Sites, and Human Sacrifice Among the Incas" J. Reinhard & C. Ceruti, 6/2005; Archaeoastronomy V. 19:1-43 _____

[574] The density p (kg/m^3) of air at any height z (meters) is given approximately[A] by : $p(z)=p(0)e^{-mgz/kT}$ where p(0)=1.2 kg/m^3 = the avg. sea level air density, e =2.*71828*... is the natural logarithm; m is mean mass of air molecules at ~29 atomic mass units [amu] & 1.66×10^{-27} kg/amu=48.14×10^{-27} kg ; g=9.8m/sec^2 is the local acceleration due to gravity, *k*=1.3806×10^{-23} joules/°K =Boltzmann constant [relating energy at the individual particle level with temp.]; & T= 288.15°K=sea level stand. abs. temp.; N_A=Avogadro's number= 6.0221 x10^{23} molecules/mole. With the top of the mountain 5,165 meters, the density will be ~54% of sea level. **A.** The equation is approx. as: a. temp. T declines with ht. Z by ~10%; b. the value of g declines with Z by ~0.1%; c. H_2O vapor in the air can condense to H_2O or ice.

[575] Though we have no tradition of Noach having any difficulty getting down or of any miracles to get him down, the Midrash Rabbah Gen. 33:2 has on Ps. 36:7: "R. Judah b. R. Simon referred the verse to Noah. The Holy One, blessed be He, said: ' The righteousness [mercy] which I showed to Noah in the ark I showed him nowhere save on the mighty mountains: as it is written, 'And the ark rested …upon the mountains of Ararat' (Gen. 8:4)".The Editor comments: ' The meaning is apparently that God's mercy was manifest when the ark rested on these mountains."'. Noah is called righteous in two verses: Gen 6:9 &7:1. It wouldn't have been mercy to deposit Noah on top of high mountains -- when in the nature of water draining away, it would tend to deposit floating things near their bottom.

It's interesting that, though Noah lived 350 yrs after the Flood according to our mesorah, & would've been a contemporary of Abraham for Noah's last 58 years, we have no mesorah of any direct communication between them. The Sefer Ha Yashar, (Venice, 1625) cited by Louis Ginzberg in Legends of the Jews, shows such communication, but that sefer isn't accounted part of our mesorah. _____

[576] The *pshat* is the meaning based on the plain sense of the words.

[577] Where the Ark may've come to rest is explored later in this work.

[578] **A.** The expression 'high mountains' is also found in Ezek 34:14 'I will feed them in a good pasture, and upon the high mountains [וּבְהָרֵי מְרוֹם] of Israel shall their fold be; there shall they lie down in a good fold, and in a fat pasture shall they feed upon the mountains of Israel.' A better translation might be 'in the mountain heights' where there's rich pasture in summer. But this isn't the key… **B.** This is the most extensive & comprehensive description of the extent of the Mabul in the whole TeNaCh. However, as we will see here and later in the discussion of the flight of the dove, it is far less comprehsnive than most would think. See notes 591

When, after half a year or more, the waters began to subside, we read two verses in succession. First, what we have already noted at Gen. 8:4:

"…the ark rested …upon the mountains of Ararat."

Then :

וְהַמַּיִם, הָיוּ הָלוֹךְ וְחָסוֹר, עַד, הַחֹדֶשׁ הָעֲשִׂירִי;
בָּעֲשִׂירִי בְּאֶחָד לַחֹדֶשׁ, נִרְאוּ רָאשֵׁי הֶהָרִים.

And the waters decreased continually until the tenth month; in the tenth month, on the first day of the month,[579] were the tops of the mountains seen.[580]
GEN.8:5

THE 'MOUNTAIN TOP' MIDRASH

The early midrashic work, Seder Olam[581], apparently takes this to mean that the tops of the mountains that the Ark was resting on were seen – and that they were among the highest mountains in the area [though the Torah doesn't say the tops of the high – or highest - mountains [from GEN. 7:19] were seen]. It then uses this interpretation, together with a number of other assumptions, to calculate the draft of the Ark -- how deep it was floating in the water. It's this work that appears to be the source of the view that the Ark came to rest on a high mountain top – even though the Torah doesn't say so.

There are many Midrashim that bring out things that the Torah does not say explicitly. That is part of what Midrashim are about. This Midrash is more unusual. Two of our greatest Rishonim, Ramban[582] and the Baal HaTurim[583] argue with its basic calculations. They say:

אֲבָל הַחסָרוֹן אֲשֶׁר מִתְּחִלָּה לְמָנוֹחַ הַתֵּיבָה לֹא יָדַעְנוּ כַּמָּה הָיָה
כִּי לֹא הוּצְרַךְ הַכָּתוּב לְהוֹדִיעַ הַשִּׁקּוּעַ וְלֹא הַחסָרוֹן [584]

"We do not know … how deeply the ark had sat beneath the surface of the waters. It was of no concern to us." [585]

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[579] This was 1 Av, [Seder Olam, ר], yahrtseit of Aaron HaCohen [Bam. 33:38] & on Shab. Masei, 5768, of Henya Chava bas Chaim, Z"L, the mother of the author of this work. It's the only date of death explicitly given in Chumash. It's the 10th month of the Flood – which started in the 2nd month of the year of the World – which begins in Tishrei. It's the 5th month, with Nisan as 1st, for the Jews.

[580] Notice that the Torah says:

"…**were the tops of the mountains seen. נִרְאוּ רָאשֵׁי הֶהָרִים** … "
AND NOT :
נִרְאוּ רָאשֵׁי כָּל-הֶהָרִים הַגְּבֹהִים אֲשֶׁר-תַּחַת כָּל-הַשָּׁמָיִם.…
"…were the tops of all the high mountains that were under the whole heaven seen."

The underlined words in green have been added from the expression near the beginning of the Mabul at GEN 7:19. This difference suggests that what was seen was not "all" of the "high" mountains "under the whole heaven" – but whatever mountains were visible in the general area of Noach at that later time when the waters were decreasing. See, further: **p 153: "THE TOPS OF THE MOUNTAINS WERE SEEN?" & p 212: "NOAH & THE MABUL: ADDITIONAL POINTS TO BE INCLUDED"**

[581] Seder Olam, chap. 4, copied in part by Midrash Rabbah Bireishis, 33:7. However, SO has the mountain tops appearing after the 40 days Noah waited & after the dove couldn't find rest. It has the dove finding rest on the mountain peaks just after they appeared. This reverses the plain sense from the order in the Torah. The sequence of concerns in MRB follows SO but doesn't say the 40 days Noah waited came before the mountain tops appeared. Rashi, Radak, Ibn Ezra, Ramban,Tur, Rabeinu Bachya, Abarbanel & Sforno argue with or ignore this point of SO & have the 40 days, etc. after (in Radak, mostly after) the mountain tops appear-ed. Rambam & his son, Avroham, have no comment. [But see Daat Zekenim on Gen8:3, tree tops are seen before tops of mountains. [But trees don't grow on tops of highest mountians -ASA]] [R. Yaakov Emden [1697 – 1776] & the Vilna Gaon [1720 –97] in their extensive commentaries on SO, incl. chap. 4, take no notice of this distinctive chronology. [pdf p. 38-42 , 1904 Warsaw Ed. by Jeruchem Meir Leiner includes both commentaries.]]

With so many Rishonim opposing SO on this, we should look closer to see what SO is about here. How can Rishonim oppose a work of Chazal? The Flood Chap. of SO, begins with an argument betw. R. Yehoshua ben Hananiah & R. Eliezer ben Hurkenus on what month the Flood began in [Rosh HaShana 11b-12a]. It concludes that the Sages follow R. Eliezer & so does SO on this point – a resolved argument of Chazal. At no other point in this chap. are other sayings of the Rabbis mentioned in connection with the Mabul. This means the rest of this Mabul Story isn't an account of resolved opinions of Chazal. It would ordinarily have the status of the opinion of one Tanna – R. Yose b. Halafta - רבי יוסי בן חלפתא - tho' he was one of the greatest of our sages in his time & his opinions in Halacha usually outweighs his individual contemporaries –(but not the Chachamim [Eruvin 47: However, these rules are promoted by Rabbi Yochanan & disputed by Rav. Rav was very close to Chiya HaGadol who is counted as a Tanna – but the usual understanding is that in disputes between Rav & Rabbi Yochanan, Halacha follows the latter.]). However, his view that the Ark landed on a mt. top isn't a matter of Halacha & his views on, e.g., the dimensions of the Mizbeach HaNechoshes in Zev. 59-60 & the Tabernacle Courtyard Curtains are opposed by his comparable contemporaries, R. Yehuda & R. Meir- as well as the plain meaning of the Torah. His view on the size of the fire in this case [only 1c×1c] requires strong reliance on miracles but there is an understanding expressed by some & opposed by others in Talmud[Ps 64:] "we don't rely on miracles-- לא סמכינן אניסא". The views of R Yose in SO were picked up by Midrash Rabba & the Rishonim, so the 'Mountain Top View' has greater weight than the opinion of one sage. Still, Rishonim can argue with what he says in SO. It's not like Halacha. [See footnotes122.B.8; 215.B.;588, 824]

[582] Ramban: acronym:Rab.Moses b.Nachman Girondi,(Girona,Spain 1194 CE – Jerus.,Isr., 1270CE) leading rabbi, physician, Torah commentator.

[583] Yaacov ben Asher, also known as Tur or "Baal Haturim" 1269- 1340-CE. Born: Germany, lived most of adult life in Spain. He never accepted a paid rabinical position. Author of the Arba Turim, one of the pillars and the prime model for the Shulchan Aruch – the code of Jewish law.

[584] ***"However, the amount of recession that took place prior to the landing of the Ark, we do not know. For Scripture did not find it necessary to inform us*** **the extent of** ***the emergence*** **of the Ark,** ***nor*** **the rate of** ***the water's recession."*** Hebrew text of Ramban & the English translation, above, is from p. 214, Ramban Elucidated, Ramban – Nachmanides / Commentary on the Torah , V. 1 Bereishis/Genesis Pt 1, 1st Edit., 1st Imp., 2004, Mesorah Pub. [Text in Times New Roman is added by translator for clarification & doesn't appear in the Hebrew.]

אבל החסרון אשר מתחלה למנוח התיבה לא ידענו כמה
היה, כי לא הוצרך הכתוב להודיע השקוע ולא החסרון:

This machine readable text of Ramban, without vowels, is from: _____

[585] Tur on the Torah: Commentary on the Torah by Rabbi Yaakov ben Rabbeinu Asher (R'osh) Translated and Annotated by Eliyahu Munk, V. 1, B'reyshit – Veyechi, Lambda Pub., 2005. p 64, comment on Gen 8:5. The Tur copied Ramban almost word for word on this.

They disagree with the basic method that the Midrash uses in coming up with its number – 11 cubits -- [586] and they say that the number is wrong. The Midrash and Seder Olam that develop this number – have two further distinctions: The Midrash doesn't actually use the expression "*were the tops of the mountains seen*"[587] -- or anything like it. When quoting the verse, it stops at the end of the date and before what happened on that date. Seder Olam says what happened. Both fail to apply their method to determine the height of the mountain.

This second point is particularly noteworthy. After calculating that the water had gone down at a constant rate of 1 cubit every 4 days for 60 days – from the 1st of Sivan to the 1st of Av, nothing is said about what happened to the water level in the very next two month period. From the 1st of Av to the 1st of Tishrei, it went down to the height of the surrounding low land. If the water level had continued to go down at the same rate, the 'mountain' that the Ark had landed on would be only 15 cubits higher than the plains. Ramban and the Tur notice this and suggest that the water did not go down at a constant rate. This is part of their reason for arguing against both the method and results of this Seder Olam - Midrash.

The only use this Seder Olam - Midrash appears to make of its hard-won number 11 is to state that the Mabul lasted one solar year and that the solar year is 11 days longer than the year of 12 lunar months – something that was well known and did not require any unusual calculations[588].

A MODEST MOUNTAIN

So, what do we do with a Midrash that hints at a "mountain" or "mountains" only 15 cubits higher than the surrounding plains when our classical commentators appear to say that the Mountains of Ararat were high mountains – at least in their part of the world? [589]

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[586] Ramban & Tur point out that the Seder Olam - Midrash uses 3 different time frames to explain the meaning of the dates that the Torah gives for different events in the Mabul – though the Torah doesn't even hint at the change in time frames. They also say the Midrash uses a counterintuitive assumption that the water was going down at a constant rate in a 60 day period. This may be why Chazal said in realtion to R. Yose: **דרבי יוסי נימוקו עמו** "R. Yose always has his answers with him" [Avot D Rabbi Nathan 18.2 Sefaria https://www.sefaria.org.il/Avot_D'Rabbi_Natan.18.4?lang=bi&wh=all&lang2=en This is usually understood as a compliment -- but it says *"his"* reasons -- not *"good"* reasons and *"with him"* not *"for us"*.[Do others say this? צ"ע]

Ramban, Ibn Ezra &, seemingly, Rashi – among other rishonim -- also differ with Seder Olam on the timing of other events. Ramban has the Jewish people leaving Israel 30 yrs later than SO [Ramban's commentary on the 400 & 430 yrs at Shem. 12:40, 42, SO Ch. 3]. Ibn Ezra doesn't follow SO where, in Ch. 1, it has Avroham leaving Haron twice –at 70 & again at 75 yrs. Ibn Ezra has the 430 yrs starting from Avroham's departure from Ur [Bir.11:28,31] at the age of 70 & doesn't have him leaving Haron twice. Rashi famously has Rivka 3 yrs old when she married Yitschok [Bir.25:20]– seemingly not following SO Ch.1, which has her 14 yrs old in what the author of a crtical text sees as the most reliable ms's. However, in at least two ms's of SO considered less reliable by the same sauthor, Rivka's age was 3. [See footnote 588 for both SO critical text, p. 213 line 29 [pdf p 230] & discussion of Rivka's age in H.W.Guggenheimer, p13-21.]

[587] We'd expect from this at least 2 separate mountains, each with at least one high peak. If the Ark rested on the high peaks of such 2 mountains, it'd form a bridge between them. If the peaks were too far apart, the "bridge" would collapse. If they weren't the same height and level in the direction perpendicular to the Ark's length, it would tilt & also come to rest on one before the other. We have no tradition that the Ark landed tilted or as a bridge. It'd be extremely unusual both as a geologic formation and as a position for the Ark. The pshat is that it came to rest on a flat area – not on high peaks. As we'll see, this is consistent with both how Chazal see a related phrase and two reports of where the Ark came to rest.

[588] This shouldn't surprise us. "Seder Olam"- is a very authoritative work taught by R. Yose ben Halafta – a student of Rabbi Akiva – and one of our greatest scholars of that age. It uses internal Biblical evidence and a systematic rational process to establish Biblical dates, ages and lengths of time – not heights of mountains. Even so, as we have seen, at least eight of the greatest rishonim argue with it. [See: Seder Olam: A Rabbinic Chronography. Chaim J. Milikowsky, Yale, 1981 & "Seder Olam: The Rabbinic View of Biblical Chronology"292p., trans.& comment. by H. W. Guggenheimer. 1998.

[589] Ramban on Gen. 8:5 says:

הנה גם לדברינו גם לדברי רבותינו וכל המפרשים יהיו הרי אררט מן "ההרים הגבוהים אשר תחת כל השמים" (לעיל ז יט): שהיו המים עליהם ט"ו אמה,...

"Now, both according to our opinion and that of the Sages and all of the commentators, the Mountians of Ararat are among the high mountains which are under the entire heavens(7:19), for it was over them that the water rose 15 cubits…."

There is a difference between saying that the Mountians of Ararat were high mountains and saying that the part of the mountains that the Ark landed on was high. We will explore this further, below.

First, we should not be surprised if Hashem chose to have the Ark come to rest on a very modest mountain – one that would not ordinarily attract notice and would never have been used for idol worship. That's how Mt. Sinai was chosen [590]. Then, we have to understand what the Torah means when it speaks of the Mabul and the mountains. This turns out to be key to understanding the whole parsha of Noah and the Mabul.

THE TOPS OF THE MOUNTAINS WERE SEEN?

We learn that this is key to where and how the Ark came to rest *'on the mountains'* from a verse about a dove[591] that could find no place to rest on *'the tops of the mountains'*. Our Mountian Top Midrash focuses on the verse, Gen 8:5, with this latter phrase. That verse tells us that on the first day of the the tenth month – Av -- *"the tops of the mountains were seen"*[592]. A few verses and at least 40 days later[593], we have something that appears to contradict this:

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[590] ***"R. Joseph said: Man should always learn from the mind of his Creator; for behold, the Holy One, blessed be He, ignored all the mountains and heights and caused His Shechinah to abide upon Mount Sinai, and ignored all the beautiful trees and caused His Shechinah to abide in a bush.*** **SOT. 5A.**

> ***"The Shekinah shall not rest upon these high mountains that are so proud,...[incl. Tabor (588m above sea level, 450m above the surrounding plain) & Carmel (546m above sea level)]. He prefers the low mountains, and Sinai among these, because it is the smallest and most insignificant of all….Mount Sinai was given the preference not for its humility alone, but also because upon it there had been no worshipping of idols; whereas the other mountains, owing to their height, had been employed as sanctuaries by the idolaters.*** ***[See footnote 638]***

Bireishis Rabbah 99.1, Numbers Rabbah 13:3 – the latter based on Prov. 29:23 *"A man's pride shall bring him down, but he that is of a lowly spirit shall attain to honor."*- has Mt Sinai saying: 'I am low'.

In contrast to this, Rabbi J. H. Hertz, writes "…this mountain is generally identified with Jebel Musa…", one of the highest in Egypt. He makes no mention of our tradition of it being "*a low mountain among low mountains*". "The Pentateuch and Haftorahs: Hebrew…English…and commentary" p.291, Soncino, 1960. He was Chief Rabbi of the British Empire, 1913-46CE. Rabbi Hertz is apparently relying on Josephus, Antiquities, 3:5:1:

> *'… Mount Sinai, which is the highest of all the mountains that are in that country and is not only very difficult to be ascended by men, on account of its vast altitude, but because of the sharpness of its precipices also; nay, indeed, it cannot be looked at without pain of the eyes: and besides this, it was terrible and inaccessible, on account of the rumor that passed about, that God dwelt there.'*

Josephus wrote this for Greco-Roman, non-Jews and aims to paint Moses as a model of their virtues. He omits all mention of the incident of the molten calf (Exod 32:4,8, Deut 9:16) and the breaking of the tablets [Exod 32:19]. He also omits Moses' act of killing an Egyptian oppressor before fleeing Egypt [Exod 2:11], giving a different reason for Moses' flight. He alters the story to fit his agenda. For this and additional examples of such distortions, see: Josephus' Portrait of Moses, L. H. Feldman, Yeshiva U., 3 parts. Jewish Q. Rev., V 82, 1992)p 285-328,V. 83 1992) 7-50, V83, 1993, 301-30

Prof. Feldman also points out *"… the rabbis* [of the Talmudic period] *never mention Josephus and there is no indication that they knew his works."* From note 609, p193, on the description of the birth of Moses given by Josephus in Anitquities, Book 2 Par. 218 "Flavius Josephus Translation and Commentary" V. 3., Judaen Antiquities V. 1-4, , trans. and commentary by L. H. Feldman, Brill, 2000.

[591] **Since the flight of the dove does not appear to be miraculous in its basic description, it can't mean that the dove surveyed the entire Earth—and may serve to localize the scene—just as the tops of the mountains were the ones that could have been seen – not those at the ends of the earth.** **See p.212: NOAH & THE MABUL: ADDITIONAL POINTS TO BE INCLUDED**

[592] **It's noteworthy here that the text says "the tops of the mountains", not "[all] the tops of the high [or highest] mountains"—since a. we'd expect the high or highest mountains to be seen first – if they were seen largely as a result of the water receding, and b. "all the high mountains" were separately mentioned when they were covered toward the start of the Mabul. This suggests that the tops of the mountains becoming visble on a single day may have been more the result of an obscuring fog being dissipated rather than the very deep water receding – though the latter is the usual understanding. [See subsection SEEING THE MOUNTAINS, below, p. 158.]**

[593] **47 days later, according to Rashi & others who understand that there was a 7 day pause between the sending of the raven and the dove. As we've already shown [see footnote 581], Seder Olam avoids this issue – & creates others - by having "tops of the mountains were seen" coming after the 40 days of waiting, etc.**

וְלֹא-מָצְאָה הַיּוֹנָה מָנוֹחַ לְכַף-רַגְלָהּ, וַתָּשָׁב אֵלָיו אֶל-הַתֵּבָה--כִּי-מַיִם עַל-פְּנֵי כָל-הָאָרֶץ ; וַיִּשְׁלַח יָדוֹ וַיִּקָּחֶהָ, וַיָּבֵא אֹתָהּ אֵלָיו אֶל-הַתֵּבָה.

But the dove found no rest for the sole of her foot, and she returned unto him to the ark, for the waters were on the face of the whole earth…GEN 8:9

The tops of the mountains have been visible for more than a month – presumably as a result of the water of the Mabul going down – and yet we read here that the whole face of the earth was covered with water! Sforno[594] recognizes the apparent contradiction [595] and explains it.

R. SFORNO'S INSIGHT

הָיָה הַנִּרְאִים הֶהָרִים בְּרֵאשִׁי גַּם לְכַף מָנוֹחַ מָצְאָה לֹא רַגְלָהּ. שָׁם שֶׁגַּם בְּאֹפֶן רַב לַחוּת

"Even on the tops of the mountains that had become visible, everything was still thoroughly wet so that even there it could not find a resting place for its foot." [596]

This reminds us that, when it comes to water, mountain tops may be different from the surrounding land – particularly in the way they're covered or what they are covered with. We'd expect, for eample, that if, as we'll suggest below, [SEEING THE MOUNTAINS p158-9], dense fogs had blocked the sun for months, the mountain tops would be covered with even more snow and ice than usual. So, anywhere in the parsha of the Mabul that we see *'all*...כָּל' in connection with *water* & *mountains* & *covering/appearing*, we'll have to look more closely to see what's most likely meant.

In the first place that we find *all* in connection with *water* and *mountains,* it is also connected with *covering* – and it comes at a surprisingly early point in the Flood.

וְהַמַּיִם גָּבְרוּ מְאֹד מְאֹד--עַל-הָאָרֶץ ; וַיְכֻסּוּ כָּל-הֶהָרִים הַגְּבֹהִים, אֲשֶׁר-תַּחַת, כָּל-הַשָּׁמָיִם.

And the waters prevailed exceedingly upon the earth; and all the high mountains that were under the whole heaven were covered. **GEN 7:19**

It is surprisingly early because only in the next verse, GEN 7:20, do we have the water rising 15 cubits:

חֲמֵשׁ עֶשְׂרֵה אַמָּה מִלְמַעְלָה, גָּבְרוּ הַמָּיִם וַיְכֻסּוּ הֶהָרִים.

Fifteen cubits upward did the waters prevail; and the mountains were covered.

Based on what we have learned from Sforno's insight, the simplest explanation of this is that the high mountains mentioned in the former verse are covered with water in a different form from the rest of the land. Since rain usually doesn't fall on high mountains – but snow does[597] -- our verse may be telling us that the high mountains were covered with a very thick blanket of snow.[598] Perhaps the dove could't find rest on the slippery ice-cold water that covered the melting ice and snow.

These two verses also contain another revelation connected to Sforno's insight. In both verses, we find, concerning the *water* and the *mountains:* וַיְכֻסּוּ ; "and were *covered*". We don't find "*covered* with *them*" or "*covered* with *water*". This is to show that the mountains in both verses were covered with water but not necessarily in the same form as the rest of the land – not necessarily in a form that could float an Ark.

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[594] R. Ovadia ben Yaakov Sforno, (circa 5235-5310; ~1475-1550 CE) [see footnote 485 for more]

[595] As we've pointed out, Seder Olam [SO] avoids this apparent contradiction by having the period of 40+ days that Noah waited occur before the "*tops of the mountains were seen*". According to SO, the 40 days ended on the 10th of Tamuz, 40 days after the 1st of Sivan -- when it says the waters began to abate. 21 days later according to SO -- on the 1st of Av – *"the tops of the mountains were seen"* and the dove had a place to land. If the Ark had landed on the highest peaks – as it did in SO – then the dove preferred the muddy, barren land right next to the Ark to Noah's hospitality. This is certainly counter intuitive.

[596] English text: p 217, Hachut Hameshulash , Trans. by R. Eliyhu Munk, '03. Hebrew text found at : _____

[597] Midrash Rabbah Tanchumah [S.Buber] "the sentencing of the generation of the flood… was to fire and snow … And where is it shown that it was to snow? Where it is stated (in Gen. 7:12): AND THERE WAS RAIN UPON THE EARTH. [From transl. by J. T. Townsend, p24 1989, Ktav]. Hebr. original: p. יב , parsha Bireshis: _____

[598] "Snow densities are typically on an order of 70 to 150 kg m^{-3}, but can be lower or higher in some cases." A Study on Snow Density Variations at Different Elevations and the Related Consequences; Especially to Forecasting. Brian J. Miretzky. _____ Thus only 1.5 cubits of rain would be needed to make 15 cubits of snow -- explaining why the high mountains would be covered before those that are not described as high and before the 'Ark floating' waters had risen 15 cubits.

In some circumstances, unmelted snow can be used for ritual immersion in a mikvah instead of liquid water.
Mishna, Mikva'oth, 7.1 http://halakhah.com/pdf/taharoth/Mikvaoth.pdf

This interpretation is even more suitable here than in the verse Sforno actually commented on. There we had *"for the waters were on the face of the whole earth".* There *water* was stated explicitly – yet the form of *water* on the tops of the *mountains* was different. Here *water* is only implied – suggesting it could be even more different.

CHAZAL ON THE MABUL

Chazal have more to say about the relationship between the Mabul and the high mountains than we've found in what we've called the Mountain Top Midrash – Bireshis Rabbah 33:7. The Midrash a chapter before this -- at Bireshis Rabbah 32:11 -- has a difference between R. Judah and R. Nechemyah. The first says that the waters rose 15 cubits above the mountains and 15 cubits above the plains; the latter says 15 cubits above the mountains and any height above the plains – suggesting it was like ordinary water[599-A].

The minimum amount of water to satisfy R. Nechemya's understanding – where the water over what is known today as Mount Ararat would be more than 10,000 cubits above today's sea level– is about 600 X as much as would be required in R. Judah's scenario.[600] The Gemorah (Yuma 76a) resolves the conflict by saying that first the waters rose to the tops of the mountains from the floods coming from the fountains of the great deep. Then the water from the rain raised the level by a further 15 amos. This appears to assume that the mountains were all the same height –which is not the way they are today.[599-B]

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could the ark come to the top [of the mountains]? Rather, all the fountains of the great deep came up first until the water was even with the mountains, then the water rose 15 more cubits.

Now which measure is larger, that of reward or punishment? You must needs agree that the measure of goodness [reward] is larger. Now with the measure of punishment it is written: The windows of heaven were opened, with the measure of goodness, however, it is said: And he commanded the skies above, and opened the doors of heaven; and caused manna to rain upon them for food, and gave them of the corn ofheaven.

[And a Tanna taught]: Now how many windows has a door? Four; hence 'doors' [imply]eight. Thus it is found that the manna which fell upon Israel was sixty cubits."

See **THE DIMENSIONS OF THE MIZBEACH HA NECHOSHES – THE COPPER ALTAR- & THE QUESTION OF "SOMECH AL HA-NES" – RELIANCE ON MIRACLES p 208 & 212 on THE MABUL – PARTICULARLY THE FLIGHT OF THE DOVE --WORK IN PROGRESS.**

C. [If HaShem wants us to know the "boat floating" waters of the Mabul were thousands of amos deep, why doesn't the Torah say so? Even the words for deep: צוּלָה [Is. 44:27], מְצוֹלָה [Jonah 2:3], מַעֲמַקִּים [Ps 69:2] & תְּהוֹם [Gen. 1:2, Is. 51:10, etc.] aren't used to describe the waters of the Mabul – though תְּהוֹם [Gen 7:11, 8:2], where some of the Mabul's water came from, is. [צ"ע] In this case, the understanding of R Yehuda is more naturalistic.

D. There are many midrashim with these 2 differing. What's the pattern?

There are also places where Rabbi Yehuda b Illai makes what appear to be strongly allegorical statements: https://www.sefaria.org/sheets/54400.7?lang=bi&p2=Bereishit_Rabbah.15.6&lang2=bi

"And Adonai Elohim made every pleasant tree sprout from the ground: It was taught that this was a tree that spread over all living things. R Yehuda bar Iliai said: The tree of life extended over a journey of 500 years and all the waters of Creation divided into streams beneath it. Rabbi Yudan said in the name of Rabbi Yehudah bar Iliai: It is not only the boughs that extend 500 years, but also its trunk that extends 500 years." Bereishit Rabbah 15:6

"The tree of life was five hundred years wide". R. Yehudah b. Ilai says: "Not just the foliage but even the trunk …"The tree of life was one sixtieth of the garden; the garden was one sixtieth of Eden. T.Y. Berakhot, 1.1

This may be saying that the Tree of Life and Garden of Eden where it grew should not be understood according to the ordinary meanings of days and distances.

E. Some might say that the water before and after the Mabul was chemically bound in certain minerals – such as very abundant clay (hydrous aluminum phyllosilicates.) Though there is a vast amount of water bound up in such minerals, the process of removing it, putting it back and leaving these minerals in the positions that we find them today – often underneath layers of impervious igneous rock -- would have involved a series of very energy intensive miracles very roughly comparable to bringing the water from another planet and returning it. Whatever the source, in the usual scenario, it would have had to flood Antarctica & disappear without leaving evidence.

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[599] **A.** The Soncino edition notes R. Judah's version was "a miracle". However, R. Nechemyah's version also required a miracle, as the additional water needed to raise sea level to cover Mt. Ararat would be ~2X all the water existing on earth—assuming the water covered both land and sea – as ordinary water would- and there were no miraculous walls of water at the edges of the land. If the sea level had to be raised to cover today's Mt. Everest, the total added would be more than 3X as much as today's water.

Further, we learn in Zevachim 59-60 in the machlokes between R. Yehuda b. Illai and R. Yose b. Halafta on the dimensions of the Mizbeach haNechoshes – the Copper Altar, that R. Yehudah wants to avoid/minimize "somech al haNes – reliance on miracles – while R. Yose specifically relies on miracles in his understanding of those same dimensions. R. Nechemya and R. Yose agree on the deep water version of the Mabul – without snow or ice. We learn that in questions of Halacha, we follow R. Yose when he's opposed by R. Yehuda – according to rules established by R. Yochanon. However, we learn in Eruvin 46b-47b that Rav - an older contemporary of R. Yochanon & founder of the Academy of Sura does not agree to these rules . We also learn that in a conflict of Halachik opinions between Rav and Yochanon – we follow Yochanon [give source]. But the description of the water in the Mabul is not a matter of Halacha!

If we want to understand the Mabul in the view of a Tanna who avoided "somech al ha nes" – we should look closely at opinions of R. Yehuda. The Torah has "all the high mountains under the whole of Heaven" covered before water rose 15 cubits [GEN 7:19-20]. This order of events is more consistent with R. Yehuda –with snow falling on high peaks as it normally does. He may understand – contrary to R. Yose- that the Ark didn't land on top of a mountain – & didn't require another miracle to push it up hill.

With thick clounds over land, temperature drops & snow-line falls, until low mtns and hills are covered – after 15 amos of water in the valleys. Hot springs will produce hot water in some places. Boiling water is a drosh. by Rav Chisda, [Amora 3rd Gen.] on Gen 8:1: ..."and the waters subsided: וַיָּשֹׁכּוּ הַמָּיִם " Rosh Hashanah 12a:4 "Ein Lemedin Min ha'Kelalos" -- rules do not need to be applied in an absolute manner. Yefei To'ar (Devarim Rabah 3:6). See re: Zev 113 https://dafyomi.co.il/zevachim/insites/zv-dt-113.htm Sanhedrin 108a.

B. This isn't necessarily the opinion of the Chachamim. It may be only the opinion of R.Eleazar of Modim: [Yoma 76a https://halakhah.com/pdf/moed/Yoma.pdf]

"And it long ago happened that R. Tarfon, R. Ishmael and the Elders were seated and occupied with the portion referring to the manna, and also R. Eleazar of Modiim *[famed for his Midrashim]* was seated among them.

R. Eleazar of Modim commenced [to expound] and said: The manna which came down unto Israel was sixty cubits high! *[It should be obvious that such deep manna wouldn't benefit the people in terms of nutrition.A.S.A.]*

R. Tarfon said to him: Modite! How long will you rake words together and bring them up against us?

— He answered: My master! I am expounding a Scriptural verse. Fifteen cubits upward did the waters prevail; and the mountains were covered. Were there indeed fifteen cubits [high] in the valley, [fifteen cubits in the lowlands], fifteen cubits on the mountains? Were the waters standing like a series of walls? And, furthermore, how

[600] Land is <3/10 of the earth's surface & on avg. ~ 0.8 km above sea level. The sea averages ~3.7 km deep.

We can solve this problem by applying what might be called the *Sforno Principle*:

> ***When it comes to covering mountain tops with water in the Mabul, that water can be assumed to take whatever form is most appropriate.***

First came the Flood from the fountains of the great deep and then came the rain. Above a certain level, the *rain* fell as *snow or ice* – or *froze* on contact -- and *coated* even the highest *mountains* with 15 cubits of some kind of *water.*

THE PURPOSE OF THE MABUL

A more basic solution – building on the *Sforno Principle* – comes from recognizing the Mabul's primary purpose. It was not to show how much water Hashem could bring to drown the earth, float an Ark above remote, uninhabited mountain peaks[601] and then make the water disappear – as seemingly required in R. Nechemya's view. It was also not to show that Hashem could make the water behave in ways water ordinarily doesn't behave -- as seemingly required by R. Judah.

It was first to build, promote and preserve righteousness in the world and all that would be associated with that righteousness. To establish this positive, life affirming program – which was also begun before the actual Mabul – God asked Noah to build the Ark. Building the Ark to God's specifications[602] was an example of doing the will of God – not whatever one feels like doing – not "going with the flow." [603]

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[601] **The Ark didn't rise straight up from where it was built. Before the mountains were covered and the water rose 15 amos [Gen 7:19-20], we have, at Gen 7:18: וַתֵּלֶךְ הַתֵּבָה עַל-פְּנֵי הַמָּיִם … …**and the ark went upon the face of the waters. **The Midrash says, at Bireshis Rabbah 32:9, the Ark went - like the distance "*from Tiberias to Susitha*" (Hippus), ~7 miles. This shows that the Ark was very well built and could have bumped into nearby hills and rocks without being damaged. Chazal say the Ark was made of** גולמיש & מבליגה **-- resinous, very hard, 'stone-like' types of cedar. (Sanh. 108b). It didn't have to float over the tops of the highest mountains to keep those inside safe.**

'Cedar' in Talmud may be a reference to as many as ten different species of tree: *"there are ten kinds of cedar, as it says, I will plant in the wilderness erez, shitah, and hadas and oil-tree, I will set in the desert berosh, tidhor and teashur together (Is. 41:19)…"*[Rosh HaShana 23a]. Rabbi Yehuda Feliks, Z"L, leading expert in the Torah World on plants in the Torah, wrote: "it is almost certain that both the gopher and the *te'ashur* [תְּאַשּׁוּר] of the Bible are the cypress [*Cupressus sempervirens*]"… noting: "[s]hips in ancient times were constructed mainly of cypress", [Ez 27:6] and the phonetic similarity of the names. [עצי בשמים יער ונוי Trees: Aromatic, Ornamental & Forest, In The Bible & Rabbinic Lit., 1997, p 244-6; & Encycl. Judaica, 2nd ed., 2007, V. 5, 346-7.]

The Jewish Encyc. adds: "the Rabbis understood by the various names which designated the cypress-tree, a tree of great endurance and hardness."____. That the wood was very durable is attested by midrashim that say some of it was found ~1500 years after the flood:[see footnotes 683-685]

***Cupressus sempervirens* and *Cedrus libani* -- Cedar of Lebanon -- had similar uses in Ancient Egypt. [Ch 15, p 349-51, 367-8, by Rowena Gale, et al, in Ancient Egyptian Materials and Technology. Nicholson & Shaw, ed. Camb. U. Press, 2000.] The lower slopes of the mountains in Northern Mesopotamia were covered with cypress forests in the early days of Noah. By the time of King Solomon – more than a thousand years later -- most of these trees had been cut. The Cedar surived this initial cutting because of its habit of growing on the mid to upper slopes of mountains.**

The pitch that was to make the ark water tight may have been a kind of "pine tar" extracted from the same trees from which the timber was cut. *"All trees of the Cupressaceae…. are resinous (especially the leaves), but resin is not copiously produced from the trunk."* Biology of Amber-Producing Trees: Jean H. Langenheim ____ Principal Mechanical Properties of …(Cupr… Semp. L.) Naturally Grown in …E… Mediterranean of Turkey, BEKTAS & KURT GU J Sci 23(3):357-62 (2010).

[602] **As we'll see, this includes not only size and materials, but also how those materials are obtained.**

[603] **The generation of the Flood sinned with hot flows of intimate relations & was erased with hot flows of the Mabul:**

אמר רב חסדא ברותחין קלקלו בעבירה וברותחין נידונו…
[SANH. 108B ENG ____ HEB ____].

That the Ark was "*sealed with pitch within and without*" [Gen. 6:14] – is to tell us that before we can have a good effect on the world outside, we must seal ourselves on the inside – controlling our passions - not going with our inner flows, as it's written: [PERKEI AVOS 4:1.2]

איזהו גבור? הכובש את יצרו…
Who is strong?
One who overpowers his inclinations…

Similarly, the Ark that held the luchos -- the stone tablets with the "ten commandments" was covered with: [EXOD 25:11, 37:2.]

זָהָב טָהוֹר מִבַּיִת וּמִחוּץ
"pure gold inside and out"
– with the inside covered first.

The Mabul itself was to erase the "go with the flow" arrogance and corruption of humankind and to humble whatever had "stood up" against God. For this, it wasn't necessary to drown the barren snow capped mountain peaks, the polar ice caps or the Galapagos Islands. As we see from Gen. 7:4 and 7:23, the torrents of water – from the Fountains of the Great Deep and the Windows of Heaven -- were for '*all those people who stood up'* אֶת-כָּל-הַיְקוּם against God—wherever they were.

Before the Mabul, at Gen. 7:4, God uses this distictive description - אֶת-כָּל-הַיְקוּם - to describe what He is going to erase.

כִּי לְיָמִים עוֹד שִׁבְעָה אָנֹכִי מַמְטִיר עַל-הָאָרֶץ אַרְבָּעִים יוֹם וְאַרְבָּעִים לָיְלָה וּמָחִיתִי אֶת-כָּל-הַיְקוּם אֲשֶׁר עָשִׂיתִי מֵעַל פְּנֵי הָאֲדָמָה.

For yet seven days, and I will cause it to rain upon the earth forty days and forty nights; and I will blot out every living substance that I have made from off the face of the earth.

After the Mabul, God uses the same expression to summarize what He has erased.

וַיִּמַח אֶת-כָּל-הַיְקוּם אֲשֶׁר עַל-פְּנֵי הָאֲדָמָה, מֵאָדָם עַד-בְּהֵמָה עַד-רֶמֶשׂ וְעַד-עוֹף הַשָּׁמַיִם, וַיִּמָּחוּ, מִן-הָאָרֶץ; וַיִּשָּׁאֶר אַךְ-נֹחַ וַאֲשֶׁר אִתּוֹ, בַּתֵּבָה.

And He blotted out every living substance which was upon the face of the ground, both man, and cattle, and creeping thing, and fowl of the heaven; and they were blotted out from the earth; and Noah only was left, and they that were with him in the ark. **GEN. 7:23**

This builds on the Midrash where this expression - אֶת-כָּל-הַיְקוּם - (here translated as *every living substance*) refers to Cain who 'stood up' against God. [604]

Also, at Gen. 7:22, in reference to those that died, we find another unusual expression:

כֹּל אֲשֶׁר נִשְׁמַת-רוּחַ חַיִּים בְּאַפָּיו, מִכֹּל אֲשֶׁר בֶּחָרָבָה--מֵתוּ.

all in whose nostrils was the breath of the spirit of life,
whatsoever was in the dry land, died.

The expression מִכֹּל אֲשֶׁר בֶּחָרָבָה here -- and usually -- is translated as *"whatsoever was in the dry land"*. But the same root word at Gen. 8:13[605] is understood to mean *devastated-destroyed* – according to Rabbeinu Yitschok Abarbanel[606] -- while יָבְשָׁה -*yab'sha*-- is used for actual dry land in the next verse and in the story of first six days of creation. So, the Mabul was directed at all those that stood up

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that became part of the covenant of the Rainbow after the Flood [Gen 9:8-17]. אֶת-כָּל-הַיְקוּם doesn't occur anywhere else in Torah, except in the second account of the earth swallowing Korach at Deut 11:6 – where וְאֵת כָּל-הַיְקוּם can mean "and all who stood up against God" with them.

[The Ba'al ha-Turim (Yaakov b. Asher, 1269-1343) at Gen. 7.4 , links these 3 uses of אֶת-כָּל-הַיְקוּם & cites Sanh. 108a to show that the connection is those where abundance led to sin & who have no share in the world to come.] In the parsha of the Mabul, God's strongest, most direct verb of destruction, וּמָחִיתִי *"and I will erase"* [Gen 7:4] *and* וַיִּמַח *"and He erased"* [Gen 7:23] -- with the verb preceding the object -- is reserved for אֶת-כָּל-הַיְקוּם .

Also, the Mishna, at Sanh. 108a, says that the expression לֹא-יָקֻמוּ רְשָׁעִים בַּמִּשְׁפָּט. *... "...the wicked shall not stand in the judgment"* [Ps. 1:5] refers to the generation destroyed by the Mabul. EMPHASIS ADDED.

[605] וַיְהִי בְּאַחַת וְשֵׁשׁ-מֵאוֹת שָׁנָה, בָּרִאשׁוֹן בְּאֶחָד לַחֹדֶשׁ, חָרְבוּ הַמַּיִם, מֵעַל הָאָרֶץ; וַיָּסַר נֹחַ, אֶת-מִכְסֵה הַתֵּבָה, וַיַּרְא, וְהִנֵּה חָרְבוּ פְּנֵי הָאֲדָמָה.

And it came to pass in the 601st year…the waters were dried up from off the earth; and Noah removed the covering of the ark, and looked, and behold, the face of the ground was dried.

[606] 1437-1508 CE, Noted in "Bereishis" Vol 1, trans. and com by R. Zlotowitz, 1977, p.274, col. 2, next to last paragraph. This meaning of מִכֹּל אֲשֶׁר בֶּחָרָבָה is also supported by חָרֹב יֵחָרֵבוּ 'utterly wasted' in Is: 60:12.

[604] **Bireishis Rabbah 32:5. From the verse at Gen 4:8:**

וַיֹּאמֶר קַיִן, אֶל-הֶבֶל אָחִיו; וַיְהִי בִּהְיוֹתָם בַּשָּׂדֶה, וַיָּקָם קַיִן אֶל-הֶבֶל אָחִיו וַיַּהַרְגֵהוּ.

And Cain spoke unto Abel his brother. And it came to pass, when they were in the field, that Cain rose up against Abel his brother, and slew him.

The expressions וַיָּקָם & אֶת-כָּל-הַיְקוּם don't occur in the story of creation or in the description of the creatures

against God with their "go with the flow" way of life. The Mabul showed that this way of life is really a path to spiritual and material destruction. All those who were already destroyed spiritually by this way to death, were destroyed physically by the Mabul.

In places where this way to death predominated, the Mabul erased not only the people and the animals they lived with, it even erased day and night[607]. The people protected in the Ark – but in the midst of the Mabul -- could not tell day from night by the usual signs -- for the torrential rain and the great clouds that held it blackened the sky and blocked out -- covered -- the sun, the moon and the stars.

As we've already discussed – in R. SFORNO'S INSIGHT - when the Torah says twice that the mountains *"were covered"* וַיְכֻסּוּ -- it doesn't say they *"were covered with them"*[608] -- with liquid water – the kind of water that lif-ted up the ark[609]. In addition to snow and ice, the mountains were covered – made invisible – by the torrential rain and the darkness of the great black clouds of rain and dust. They were covered to 15 amos and more by water – but not necessarily for the same period that the lower land was covered and not necessarily in continuous liquid form.[610]

SEEING THE MOUNTAINS

The mountains were seen again not only when liquid water receded. The Torah doesn't speak of water receding from the mountain tops. It says, at Gen. 8:8, as we've already noted above: *"…in the tenth month, on the first day of the month, were the tops of the mountains seen."* So the Torah says that the tops of the mountains became visible on a single day. It doesn't say "*the tops of some of the mountains*" -- which is what we'd expect from receding water – where the mountain tops differ in height by thousands of meters.

Rather, this is what we'd expect when the dense clouds and fogs were dispersed and the true miracle of what we tend to take for granted as "ordinary visibility" [611] returned to those left to see.[612]

WHAT ABOUT THE PENGUINS?

The usual understanding also has it that, except for life in the Ark, all life on land was destroyed. In Gen 7:23, already quoted in full above, we read: וַיִּשָּׁאֵר אַךְ-נֹחַ וַאֲשֶׁר אִתּוֹ בַּתֵּבָה.…

…and Noah only was left, and they that were with him in the ark[613]

But the Midrash says that Og and the Re'em survived outside of the ark[614]. Concerning what's usually seen as the same Og, we have:

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[607] Midrash Rabbah 25:2 and 34:11 on Gen 8:22, citing Bava Metziah 106b

[608] This would be: וַיְכַסּוּ. (Based on consultation with a biblical grammarian.)

[609] וַיִּגְבְּרוּ הַמַּיִם וַיִּרְבּוּ מְאֹד עַל-הָאָרֶץ וַתֵּלֶךְ הַתֵּבָה עַל-פְּנֵי הַמָּיִם.
"…and the ark went upon the face of the waters."
[GEN 7:18, see footnote 601] The expression *"face of the waters"* isn't needed if ordinary water could be assumed.

[610] A rain gauge placed even on the mountaintops might've measured 15 amos of water – but the water would quickly freeze or run down to lower lands where there were practi-tioners of "go with the flow' to be reached with the *"going flow".* Ordinarily, 'rain' on high mountain tops falls as snow.

[611] On fogs & clouds lifting or clearing as perhaps the most likely interpretation, see footnote 592 & RaDaK's opinion on the major role of clouds in the Mabul,see footnote 614D&E. See also in this sefer: SEEING WHAT SEEMS MISSING & THE COLOR OF KINDNESS

[612] Consistant with Bir.Rab.33:5, which, on '*he sent forth a raven*' [Gen. 8:7] has: "Thus… '*He sent darkness and it was dark…'* [Ps . 105:28]".

[613] A. The Baal Haturim brings the 4th principle of R. Elliezer's 32 Midos to show that אַךְ 'ach' means something else was saved – *eg.* Og.
B.1 Midrash Rabbah 32:11 " Ak is a diminishing particle: He too coughed blood on account of the cold" Soncino, 2nd ed. 1951, p 256. "R' Huna said in the name of R' Yose: The Expression 'אַךְ' is limiting-indicating that even [Noah} was heaving, retching up blood due to the cold permeating the Ark. [Midrash Rabbah Wasserman Ed., 2014 B.2 Midrash Tanchuma Noach 9.2 "…R. Yohanan… tells us in the name of R. Eliezer son of R. Yosé the Galilean that because Noah once delayed feeding a lion, the lion bit him so severely that he left the ark crippled, as it is said: *And only Noah was left* (Gen. 7:23). The word *ah* ("only," also "to be afflicted") indicates that his body was no longer whole. He became, thereby, unfit to bring sacrifices to the altar,[15] and his son Shem had to do it in his stead. " https://www.sefaria.org/Midrash_Tanchuma%2C_Noach.9.2?lang=bi&with=all&lang2=en
C. The Midrash of Thirty-Two Rules of Interpretation Author(s):H.G. Enelow Source: The Jewish Quarterly Rev. ,Apr., 1933,V. 23,No.4 (pp. 357- 367 Pub.Univ. of Penn. Press Stable URL: https://www.jstor.org/stable/1451936 [This refers to Eliezer (or Eleazar) ben R. Jose ha-Gelili] D. rule 2 is "Mi'uṭ (limitation): The particles "ak," "raḳ" and "min" indicate that something implied by the concept under consideration must be excluded in a specific case."https://www.jewishencyclopedia.com/articles/12935-rules-of-eliezer-b-jose-ha-gelili-the-thirty-two E. The extreme spread between B.1: couging up blood from the cold-- and B.2 mauled by a lion -- from being too slow delivering food-- suggests that possible additional interpretations that may be quite different from these two -- including the allowance for saving creatures outside of the Ark-- as we will see below.

[614] A."…the giant Og …sat on top of the ark securely, and in this way escaped the flood of waters." The Legends of the Jews, L. Ginzberg, V. I, citing Pirkei D'Rebbe Eliezer 23 ____
B. *"R. Judah said the re'em (wild ox) did not enter the Ark – but its whelps did"* Midr. Rab. 31:13._____ [see also R Yehuda & others on the dimensions of Cush, , the World , Eden & Gan Eden in TB Pesachim 94a & TY Berochos 1.1[6a1 Schot] However, at Zev.113b, a day old re'em as big as Mt.Tabor[~1km^3,~20k×size of Ark, billion×large ox]– seen by Rabbah b. bar Hanah [See footnote 58] - had its nose

כִּי רַק-עוֹג מֶלֶךְ הַבָּשָׁן, נִשְׁאַר מִיֶּתֶר הָרְפָאִים ...
For only Og, king of Bashan, remained of the remnant of the Rephaim… **[Dev 3:11]**

Here, the word רַק *(rok)* is used for *only*. For Noah, the word אַךְ *(akh)* is used. אַךְ can mean: *surely, howbeit, but, yet* as well as *only.* If the Torah wanted us to understand that only those in the Ark were saved, the word רַק -which only means *only*- would seem to have been more appropriate – as it was used in the related story of Og[615].

This suggests that those who stood up against God, who were following the "go with the flow" way to death and who had already destroyed themselves spiritually, perished in the Mabul. They died together with their animal "go with the flow" intimates. Those not associated with such ways – like fish in the sea, giant Galapagos turtles, the moa of New Zealand and the penguins in the Antarctic -- were spared.[616]

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tip placed in the Ark & was tied to the Ark by its horns & the Mabul's hot H_2O didn't dissolve the Ark's pitch seal because, miraculously, the Ark's sides & contiguous H_2O were cooled. [So, Chazal don't question (1) existence of 'one day old', billion ton re'em – which, in the 'natural world', would've collapsed under its own weight into an airless, fluidless mass [See **'Grasshoppers and Government'** in this sefer]; (2) what would've happened if it sneezed or (3) moved its head while so attached to the comparatively tiny Ark- but point to the miraculous nature of mundane things –cool water- & most of the water in the time of the mabul was cool – otherwise the fish would've died. See footnote 616. See also the author's sefer 'A SIGN FOREVER' at 'foxy'.]

C. Some take this citation of the miraculous, &/or the ref. at Gen.8:22 that "*…cold & heat, & summer & winter, & day & night shall never cease…*" – after the Mabul – to say the whole Mabul was miraculous - not amenable to examination based on natural law. [e.g.: Torah, Chazal & Science, R. Moshe Meiselman, p. 547, footnote 26 citing Rashi [928 p., '13]. _____] Yet, he notes that, Mid. Rab. Bireishis 34:11 [& < 25:2 >] -- on this same verse –shows Chazal divided on this question:

א"ר יוחנן לא שמשו מזלות כל י"ב חדש, א"ל רבי יונתן שמשו אלא שלא היה רשומן ניכר,
ר"א ור' יהושע, ר"א אומר לא ישבותו לא שבתו, רבי יהושע אומר לא ישבותו מכלל [< מכאן >] **ששבתו.**

*"R. Yochanan said: The stars didn't function the whole 12 months. Said R. Yonathan…: They functioned, but their mark was imperceptible. R. Eliezer said: They shall not cease implies they never ceased. R. Yehoshua deduced: They shall not cease: hence it follows…they ceased.'*_____

D. So, according to R. Yonathan, the Laws of the World – represented by the stars - continued to apply – but their influence on the Earth wasn't significant. This, explains RaDaK, [R. David Kimchi, 1160–1235CE], in his perush on Bireishis 8:22, 'כי היו מעננים כל אותם הימים' was due to the clouds, etc., assoc. with the Mabul. [When ASA noted this to R. M.M.,motzei Shab. Balak, 5775, in the balcony of Bostoner Shul in HarNof, Yerush.[in clear hearing of R. D.R. standing nearby], he said "RaDak didn't understand Chazal".] It's consistent with "הַקֶּשֶׁת בֶּעָנָן *-the bow in the cloud…"* just after the Mabul [Gen 9:14] & with the overall naturalistic pattern – rain falls, the ark floats, animals must be fed, birds fly, etc.

E. Pairs 'cold:heat,' etc., tell us the usual clear differences between these pairs ceased during the Mabul – not that there were no differences at all. Thick clouds could've made 'day' like dusk – but still brighter than night.

F. According to R. Eliezer, **"seedtime and harvest, cold and heat …"** didn't cease [supra, **C.**] This is consistent with his positions on **1.** the time of the Mabul – it began in Cheshvan – when rain increases & water rises in natural springs [Rosh HaShana 11b _____];[The Chachamim [Rosh HaSh. 12a] & R. Yose b. Halafta in Seder Olam, ch. ד, agree with him on this.] **2.** the constellations – represented in this case by Kima [Pleiades] followed a natural course in terms of when & where they rose [based on his description [Rosh HaSh. 11b] what we observe today ; **3.** water for rain comes from the Ocean. [Ta'anith 9b _____] On the first 2 points, R. Yehoshua b. Chananya, his close colleague & fellow close student of R. Yochanon ben Zakai, takes an opposite view. On point 3, he says that the rain comes from the Rokia. [Observation today supports R. Eliezer on this. Rokia may refer to a spiritual realm that is not directly observable.] So R. Eliezer is supported against R. Yehoshua on points **1** & **3**. On point **2**, there are no comments from the Chachamim & if the constellations followed their pattern observable today, R. Eliezer would be correct. On one very unusual point however, they agree: Corresponding to the way people changed their behavior – doing unnatural things – Hashem changed nature by "taking two stars out of Kima & bringing a flood on the world." This may also explain R. Yehoshua's understanding that Mazel Kima rose in the wrong time & direction. Mazel Kima – if it's Pleiades – looks most like a comet. This last point is consistent with the scenario we'll explore in:

Chapter 4: THE MABUL AND A COMET/EARTH IMPACT?

[615] **A** אַךְ here is seen in the Midrash to show Noah's suffering in the Ark & that giant Og & Re'em survived outside it. If these two survived outside the Ark, it may be because they were on the Ark or on the water -- & not "עַל-פְּנֵי הָאֲדָמָה – on the face of the earth." Perhaps this can mean those similarly not on the "face of the earth" – on the ice, in air pockets in caves or even on islands that may have been considered 'buttle to the sea'-- may also have survived. Og & the Re'em may be stand-ins for these – which like the fish – weren't the target of the Mabul.

B. Note also 'נֶפֶשׁ חַיָּה' to describe the water creatures at Gen 1:20, but at Gen 1:30 "And to every beast of the earth, and to every bird of the air, and to everything that creeps on the earth, everything that has the breath of life, I have given every green plant for food… אֲשֶׁר־בּוֹ נֶפֶשׁ חַיָּה…" & in the covenant not to bring another Mabul [Gen 9:15 'every living creature of all flesh' כָּל־נֶפֶשׁ חַיָּה בְּכָל־בָּשָׂר; Fish as a type of meat: בָּשָׂר in Bam. 11:21 & " אֶת־כָּל־דְּגֵי הַיָּם " in Bam. 11:22. However, to distinguish fish we have: Gen 9:15- "…which is upon the earth-- אֲשֶׁר עַל־הָאָרֶץ: " ; Gen 9:10 "and with every living creature that is with you…as many as came out of the ark.-- וְאֵת כָּל־נֶפֶשׁ הַחַיָּה אֲשֶׁר אִתְּכֶם בָּעוֹף בַּבְּהֵמָה וּבְכָל־חַיַּת הָאָרֶץ אִתְּכֶם מִכֹּל יֹצְאֵי הַתֵּבָה"

C. The target, according to the Midrash, was planters – not shepherds or woodsmen. The Re'em was a wilderness animal & at 'one day old' wouldn't have had corrupt relations with other animals or humanity. Og, King of Bashan [Bam.21:33;32:33; Dev.1:4; 3:1,3,4,10,11,13; 4:47; 29:7; Josh.9:10, 12:4,13:12,30; 1Ki. 4:19; Neh.4:22; Ps. 135:11;136: 20] was a pastoralist— King of a land "…of rams, lambs, goats, & bulls…" [Eze 39:18] which also had "thick oak forests" [Zec.11:2]. The 'target' of the Mabul was like the people of Sodom [B.M.Yerush.4.2 _____]—a city built on irrigation technology – not shepherds or woodsmen. See:

How did the generation of the Mabul get so bad? …

[616] **A.** Bireishis Rabbah 32:11, Sanh.108a & Zev. 113b _____say the fish were spared. Why? Because they didn't sin with Man [MaHaRSHA (Morenu Harav Shmuel Halevi Adels) 1555-1631]. "[O]nly the fish survived because they did not sin like the other creatures", Midrash Says, p.95, R. Moshe Weissman, '95, citing: 'שלא היו בכי השחית כל … **טוביה בר אליעזר** , Midrash Lekach Tov - לקח טוב -**[1097-1108]**…בשר'pdf p.108._____

B. Did people benefit from fish before the Mabul? Maybe they used fish for oil, fertilizer, sewing needles or leather? If so, why were the fish spared – if the Mabul was to destroy everything created for the benefit of people? However, if it was to destroy things that were corrupted by people – and the fish were not corrupted – then the fish would be spared even if they were used by people before the Mabul.

C. [The Vilna Gaon's commentary on the Mishna, "אליהו רבה" - Eliyahu Rabba, has on Keilim, 10:1, שכל שבים מין דג הוא כל דמות שיהיה לו ***"all living things that are in the sea are a type of fish in all forms that it has."*** _____ This is incl. sea snails under the term 'fish' –but does it incl. whales? ____] If only air breathing creatures were destroyed, what about whales? A newborn blue whale is 3 tons.

D. Some land animals are understood to have had no contact with people until long after the Mabul. The moa was a giant, wingless bird standing up to 12ft. tall. It was the favorite prey of Haast's eagle --- the largest in the world. The eagle died out when the moa was hunted to extinction by people who arrived in New Zealand after 1200CE.[see ref. at **F.b**] Before that, there were no people on these islands that cover ~1E5 sq. miles & include more than 10 mountains ~2 miles high. Today, the mostly temperate islands have ~4E6 people & 40E6 sheep. [note cont. next p.]

SO, WHERE DID THE ARK COME TO REST?

With all of this, we still haven't determined where the Ark came to rest. Was it on that giant mountain – the one known today as Mt. Ararat – the one that's three miles high and perpetually capped with snow and ice? Or is it an obscure Sinai-like little hill as seemingly implied by our analysis of the "mountain top Midrash" – or something else?

The best place to look for an answer is where we began– with the Torah's actual words. At Gen. 8:4 it says: .עַל הָרֵי אֲרָרָט ... on the mountains of Ararat. We have already seen that the usual expression for *top* is ראש [rosh]. What does עַל [al] mean in the context of mountains?

The closest that we have to our case is the language used with a pair of mountains:

וְנָתַתָּה אֶת-הַבְּרָכָה עַל-הַר גְּרִזִים,
וְאֶת-הַקְּלָלָה עַל-הַר עֵיבָל...

...thou shalt put the blessing upon mount Gerizim, and the curse upon mount Eval . Dt 11:29:

Here is the description of the way the instructions were actually carried out:

... חֶצְיוֹ אֶל-מוּל הַר-גְּרִזִים, וְחַצְיוֹ אֶל-מוּל הַר-עֵיבָל:..

And all Israel, and their elders, and officers, and their judges, stood on this side of the ark and on that side, before the priests the Levites, which bare the ark of the covenant of the LORD, as well the stranger, as he that was born among them; half of them over against mount Gerizim, and half of them over against mount Eval; as Moses the servant of the LORD had commanded before, that they should bless the people of Israel. [JOSH 8:33]

On this, Rabbi David Kimchi (RaDaK)[617] writes that they ascended the slopes of the mountains.[618] So the people ranged from the valley between the mountains – where the Ark[619] and the priests were --- to and up the mountain slopes. However, it appears from the concluding opinion of a discussion of this

3 ARTISTS' IMPRESSIONS OF THE DODO
L. Oxford Univ. Scientific Reconstruction; C. 1626, Roelant Savery, Dutch R. 1624-1650, unascribed, Fig. 1 in Mughal Painter of Flora and Fauna Ustād Manṣūr By Som Prakash Verma. C & R are possibly from life.

E. A similar scenario played out in Madagascar. [see map, Fig B, p.191] It has ~26E6 people & ~0.6E6km^2, but no human inhabitants until ≤2y BP. It has hundreds of species of land animals found nowhere else. It was home of flightless, 400kg, elephant birds, largest in the world - with eggs ~1m around; extinct under human influence ~1000y ago. 'New evidence of megafaunal bone damage indicates late colonization of Madagascar' A. Anderson, atholl.anderson@anu.edu.au et al, PLOS ONE https://doi.org/10.1371/journal.pone.0204368 10/10/'18

F. Also, Hawaii now with ~1.4E6 people & ~11E3 miles^2 of land, was uninhabited in Noah's time. Here, dozens of species of unique birds were driven to extinction by people since 1200CE, incl. heavy, wingless ducks with 'small bony pseudoteeth'. *a"The diet and ecology of Hawaii's extinct flightless waterfowl: evidence from coprolites"* H.F. James & D.A.Burney. Biol.J.Linnean Soc. v.62, #2, '97, 279-97. *b "High-precision radiocarbon dating shows recent and rapid initial human colonization of East Polynesia"* Janet M. Wilmshursta,et al, 2011, PNAS Wilmshurstj@landcareresearch.co.nz

G. Similarly, the 1,865 km^2 Island of Mauritius, now with 1.3E6 people, was uninhabited in the time of Noah. It was the only home of the famous Dodo bird - shown above. The unique, 3 ft. tall 20-40 lb. creature went extinct under human influence ~300 yrs. ago. [see map, Fig B, p.191]

H. Steller's sea cow – a giant manatee, ≤9m & ≤10tons [3X nearest living relative]: discovered near the previously uninhabited Commander Islands in Bering Sea in 1741 [see p. 191]; reported hunted to extinction by 1768.

I. Several very different types of giant tortoise – including some from the then uninhabited Galapagos in the Pacific & Réunion in the Indian Ocean –went extinct in recent centuries not long after people arrived.

J. In connection with penguins & other flightless birds, it is interesting that in those psukim that use the root word מָחָה '*erase*': Gen 6:7, 7:3-4 & 7:23, it's birds of the heavens – flying birds – that are referred to, suggesting flightless birds were not a primary target of the Mabul.

K. Consider Polar bears that spend almost all of their lives on ice—and the various types of seals that they feed on. Consider manatees and sea turtles that spend almost all of their time in the sea.

L. In the same vein, at Gen 9:19, we find .וּמֵאֵלֶּה נָפְצָה כָּל-הָאָרֶץ ... *and of these was the whole earth overspread."* We would expect to find that the whole world was descended from them – the three sons of Noah. We find, for example: יֻלְּדוּ לְהָרָפָה בְּגַת אֶת-אַרְבַּעַת אֵלֶּה ..." ...*These four were descended from the giant in Gath"* [2Sam 21:22] . Also: *Achiman, Sheshai, & Talmai the sons of Anak* [NUM 13:22], who, Rashi says [NUM 13:33] descended from Og's grandfather, Shamchazai.

617 Hebrew: דוד קמחי, 1160–1235CE. Lived in Spain & France; not Israel.

618 "The Book of Joshua" Judaica Press, 2nd ed. , 1980, p 61.

619 Ref. to the Ark - אָרוֹן - that held the Luchos, also a wooden box – like Noah's Ark - תֵּבָה – but the word in Hebrew is very different.

in the Gemorah,[620] and the geography of the valley[621] that they may not have ascended the slopes very much:

Rebbi[622] says: Both [the priests and Levites] and also [the Israelites] were standing below [i.e. in the valley]. They turned their faces towards Mt. Gerizim and opened with the blessing, and then towards Mt. Ebal and opened with the curse; for what means עַל [*'al*]? It means 'near to'; as it has been taught: 'And thou shalt put pure frankincense near עַל each row' [Lev. 24: 7.] — *Rebbi* says: 'עַל means 'near to'. You declare that עַל means 'near to'; but perhaps it is not so and the signification is actually 'upon'? Since it states:

[... וְסַכֹּתָ עַל-הָאָרֹן, אֶת-הַפָּרֹכֶת.]

'Thou shalt put a veil עַל [*'al*] the ark' [Ex. 40: 3].

Conclude that עַל [*'al*] means 'near to'.[623]

OUR MOST RELIABLE AND DETAILED REPORT

This picture is remarkably similar to our most reliable and detailed report of exactly where Noah's Ark came to rest. It's from the journal of a rabbi who lived over eight centuries ago – in the time when Christians from Europe ruled much of Israel and the descendent of David -- the Exilarch -- sat on a throne with the Caliph in Bagdad. This rabbi, Binyamin ben Yonah of Tudela, traveled roughly 10,000 miles over a period of about thirteen years, from his home in Tudela, Spain, to the Persian Gulf and back.[624] After reaching Israel, he traveled by stages along the northern arc of the Fertile Crescent. Near the north eastern limit of this route he came to a city on the Tigris River – about 500 miles as the crow flies from Mount Eval and Mount Gerizim. In his own words, he writes, *that he came*:

לגזירה אבן עמר והיא בתוך נהר חדקל לרגלי הרי אררט מהלך ארבע מילין למקום שחנתה שם תיבה של נח. אבל עמר בן אל כטאב לקח את התיבה מעל שני ההרים ועשה אותה כנסת לישמעאלים...

"...to Geziret Ibn Omar which is surrounded by the river Hiddekel [Tigris] at the foot of the Mountains of Ararat, a distance of four miles to the place where Noah's Ark rested. But Omar ben al Khataab[625] took the ark from the two mountains and made it into a mosque for the Ishmaelites. Near the ark is the Synagogue of Ezra to this day, and on the ninth of Ab the Jews come thither from the city to pray. In the city of Geziret Omar

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620 Sotah 37a. but [Mishna 32a Ch.7] "Six tribes ascended the summit of Mt Gerizim, six tribes ascended the summit of Mt Ebal, & the priests & Levites with the ark were stationed below in the centre, the priests surrounding the ark, the Levites [surrounding] the priests, & all Israel on this side & that side; Text adapted from: http://halakhah.com/pdf/nashim/Sotah.pdf

621 The valley floor has over 0.2km^2 of ~level space (± 50 m) & the tops rising another 300 -400m.

622 R Yehudah HaNasi,(135–219 C.E.)compiled the Mishnah & lived in Erets Yisrael. The mts are ~midway betw. Yerush. & Tiberius—so he would've known the geography. His comment is not in T Yerush. at this Mishna [ch. 7]. None of the discussants cite "on the mountains of Ararat" for clarifications – suggesting they saw it was ambiguous. "...upon this mountain - עַל הָהָר הַזֶּה: ..." [Ex 3:12] isn't brought because it refers to the whole mt. "...upon one of the mountains... עַל אַחַד הֶהָרִים ..." [Gen.22.2] refers to the loc. of the Holy of Holies – which was/is surrounded by higher peaks. "...upon the high mountains...עַל־הֶהָרִים הָרָמִים..." [Dt.12.2] may refer to mountain tops for idol worship. Schot. Ed., 2000, at 37a^2 n.20, says see Maharsha [Shmuel Eliezer b Judah Edels, ha-Levi [1555–1631]] for resolution - but this doesn't appear to resolve the apparent contradiction between the Mishnah & Rebbi. The ark either landed on extremely low mountains –to be on top, sides & bottom like the Chachamim in Sot. & without much tilt- or at bottom, like Rebbi. It's ~5km betw. the high points on either side. See Fig C,p.191 for a picture of the 2 mts.

623 Also, at 'al hamidbar' (Gen 14:6), Rashi says it means 'by' – not "on'. He also says עַל 'al' -usually means 'on', not 'near to'. [See also 'al har Gerizim' at Dt. 27:12 dsitnguished from 'b'har Eval' at Dt 27:13. Why?]

624 [The journey took place ~1159-73 [Encycl. Jud. V. 3. 2nd ed. '07. p362-4.'07,Cecil Roth. A. [The Jewish community of Cizir may've been destroyed/dispersed in the Mongol invasions of the area in the following century [?].]] מסעות ר' בנימין מטודילה The Itinerary Of Benjamin Of Tudela, Critical Text, Trans. & Commentary, Marcus Nathan Adler, 1907) at B. Version C has colored maps but isn't searchable.

A. _____ B. _____ C. _____

The importance of reading such a text in the original, is brought out by the peculiar way both M. N. Adler in this 1907 edit. & A. Asher in his 1840 edit., translate R. Binyomin's words ארץ ישראל [Land of Israel]. Both give "Palestine" without any note or explanation. For example, p. 32, top and lines 4-5 of p. ג in Asher and the same passage in M. N. Adler which appears on his "p. 2", line 15 and p. ג.

This sefer, was learned in depth by the "Tsemach Tsedek". In "Sefer HaToldos Admur Maharash", it's grouped with other holy sforim: "The Maharash then took the next sefer, Mas'os R. Binyamin. He questioned his father about several passages, and he recited the required text exactly, including the geographic names, etc."_____ A 1904 Hebrew critical text with more refs is at: _____
Cited in ArtScroll Berishis, p265, 1977 - sefer appr. by R. Moshe Feinstein.

See/read 'The Transmission And Reception Of Benjamin Of Tudela's *Book Of Travels* From The Twelfth Century To 1633' PhD Thesis, Marci Freedman, U of Manchester, School of Arts, Languages and Cultures,'16.

625 2nd Caliph, 634-44 CE, who lived 530+ yrs before R. Binyamin's visit.

are 4,000 Jews, at their head being R. Mubchar, R. Joseph and R. Chiya."[626]

Geziret Ibn Omar is known today as Cizir or Cizre. It's a mostly Kurdish city in the SE corner of what is now Turkey – near the border of SE Turkey, NE Syria and N Iraq. Four miles north of the city is a remarkable geological formation. It looks like a wall, rising .6km from the height of the city and stretching east-west ~10km. Beyond that, the wall merges into mountains. On the east, 20km ENE from Cizir, the mountains rise to the peak of Mt. Judi, over a mile above the Mesopotamian Plain. This is the highest mountain[627-A] in the area, visible from Ninevah, 80 miles to its South East[627-B].

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[626] **1.** The "*mosque for the Ishmaelites"* may refer to: **A.** mosque at Kufa on Euphrates, connected (in Islam) to Noah's Ark & 2nd Caliph. They say Noah got into the Ark there. _____ [We'll suggest a more likely place for start of Noah's journey, in Part Two.]or, more likely : **B.** a structure in Jerus. :*"... where the Temple once stood,...* [where Moslems built]*... a square house of prayer, in a rough manner, by raising beams and planks upon some remains of old ruins... said* ...[to] *hold about three thousand men* " The Travels of Bishop Arculf in the Holy Land, towards A.D. 700,.... "Early Travels In Palestine..., Thomas Wright, 1848 _____

2. The usual building mat'l in Jerus., then & now, is stone – with wood relatively scarce. Cedar wood for Solomon's Temple was imported from ~300km away -- among "the cedars of Lebanon"[1 Kings 5:20, 2 Chr. 2:7] R. Binyamin visited Jerus. before Cizir & Kufah after. In Jerus., which had long been in the hands of the Crusaders, he noted only 4 Jewish families living there, all dyers. **3.** Instead of the wooden structure, R. Binyamin reports: *"Upon the site of the sanctuary Omar ben al Khataab erected an edifice with a very large and magnificent cupola"* – known today as the "Dome of the Rock". However, though this Caliph built the first mosque on the site, & is said to have built over 1k other mosques, he didn't build the cupola. It was a mistake that many of those in the city made at that time & Jewish & Moslem scholars were probably not available in the Crusader occupied city to provide a more accurate account of its history.

4.a That some ancient wood might've been used to build a new mosque on the Temple Mt. is supported by the finding that some beams in nearby Al-Aqsa were from trees felled 1.5k yrs before the Mosque was built. "Comparative Dating Methods: Botanical Identification and ^{14}C Dating of Carved Panels and Beams from the Al-Aqsa Mosque in Jerusalem", *J Archaeological Sci.*, ('97) 24, 1045–50. N. Liphschitz, et al. "Analysis of the wooden beams and panels removed from the mosque during renovations in the 1930s shows they are made from Cedar of Lebanon and cypress. Radiocarbon dating indicates a large range of ages, some as old as 9th-century BCE, showing that some of the wood had previously been used in older buildings." [Some *Cedrus libani* beams were from trees that had been felled centuries before the construction of the mosque. Some *Cupressus semp.* [cypress] beams are from trees that were felled ~800BCE. **4.b** "Studies of ...the cedar, oak, and cypress wood from Al-Aqsa and Omar mosques on the Temple Mount ...will...benefit from isotopic identification [based on soil location specific 87Sr/86Sr ratio,][of] the origin of the wood." Wood remains from archaeological excavations: A review with a Near Eastern perspective, Simcha Lev-Yadun, Isr. J. Earth Sci. 56: 139–62. **4.c** Provenancing East Mediterranean cedar wood with the 87Sr/86Sr strontium isotope ratio, Sara Rich__ ,Sturt W. Manning, Patrick Degryse, Frank Vanhaecke, Karel Van Lerberghe, Archaeol Anthropol Sci (2016) 8:467–76 **4.d** See also, on ancient beams connected with the Al Aqsa Mosque: "Did ancient beams discarded in Old City come from first and second temples?" Matti Friedman, 1.5k words 5/22/13, The Times of Israel _____

5. Omar is said to have built ~100km, Nile-Red Sea canal, in 6 months – for food deliveries to Arabia (p87-8, v. 2); for the no. of mosques see p156, v. 2, ; Omar had a knowledge of Hebrew & listened to Jewish discourses on the Torah (p308, v. 2); He instinctively took off his shoes when walking in area of Bes HaMikdash (p216, v.1). Refs. are to Omar the Great, the second Caliph of Islam,M. Sẖibli Nu Mānī. Trans.: Zafar Ali K̲ẖan('61-2). A Cairo Genizah document shows Omar permitted 70 Jewish families to settle in Jerus. . *Encyc. Jud.* 2nd ed.'07, V. 11, p154, citing Assaf, BJPES VII, p. 22ff. Cited in more detail in A History of Palestine, 634-1099, Moshe Gil, p70-1, 97. **6.** R. Binyamin doesn't mention Noah assoc. with Kufah, or Mt. Ararat assoc. with Armenians, Alans & others living in the area of that giant mt..

[627-A] It's ~2089m, 37.3789,42.4532. Higher peaks might be visible from Nineveh, incl. one that's ≥3,320m high & ~1km long, ~100km N of Nineveh at 37.399,43.310. However, these peaks are partly behind other mountains & may be much more difficult to discern.

[627-B] A related account of another Jewish traveler who came to Baghdad [10+ yrs] after R. Binyomin, is: "Rabbi Petachia [a] [coming from the N & W, via Poland, Crimea etc.] passed into the land of Togarma [Armenia]...From Togarma he entered the country of Ararat. In eight days he journeyed as far as Nisibis, leaving the high mountains of Ararat at the right (7) [b] ...In the land of Ararat he travelled in the mountains of Ararat as far as Nisibis and the city of the Hisn Kaifa[c] At the extremity of the mountains of Ararat he travelled two days [לצד שכנגדו]- to the opposite side.[d] At Nisibis there is a large congregation, also the synagogue of Rabbi Judah, son of Bethera, and two synagogues built by Ezra the Scribe ...From Nisibis the rabbi journeyed in three days[e] to New Nineveh [Mosul,... on t]he river Tigris (9) ...There are large cities in the land of Ararat. There are few Jews there. In ancient times many Jews lived there. However, they slew each other and separated and went to the cities of Babel, Media, and Persia (19)

...R Petachia said that the mountains of Ararat are five days journey from Babylon[f]. The mountains are high. There is one high mountain, [ולמעלה ממנו] above which there are four others of which two are opposite two. The ark of Noah was carried between these mountains and could not get out. However, the ark is not there for it has decayed..." (49)

ואמר הרב ר' פתחיה שהרי אררט רחוקים מבבל מהלך חמשה ימים. והם הרים גבוהים. והר אחד גבוה מכולם ולמעלה ממנו (לפניו) יש ארבעה הרים שנים כנגד שנים, ונכנסה תיבת נח בין אותן ההרים ולא יכלה לצאת משם: ואין התיבה שם עתה כי כבר נדקבה [g]

a. Text by contemp, Jehudah HaChasid b'Samuel, of Regensburg, [d.1217], based on R. Petachia's account, much omitted. Jewish Travellers, Elkan N. Adler, Routl., 1930; Travels of Rabbi Petachia of Ratisbon translated...[&] published with the Hebrew...[&] notes, A. Benisch & W. F. Ainsworth, 1856. Notes in[ ]are from above sources. Page numbers in ( ) are from A. Benisch. b. ~590km walk:, Igdir, town NNW of Mt A→Nis; ≥19 days, ~30km/day. c. Maybe he went downstream on raft from Hisn Kaifa to beyond the Tigris cliffs, ~10+ km W of Cizre, then W, by rd, to Nisibis, mountains on right still rising .4-.6km most of the way. All 3 cities are in/near the Kurdish Mt's – not Mt. A. d. Maybe, from where he came out, he went W. 2 days' trip 'alongside' the mntns. It's 2 day trip W, Cizre→Nisibis, accdng to R. Binyamin. Why isn't Cizre noted? Not there/Editing choice/error? e. 190km atcf, flat, by horse? f. [p48-9 B&A] With traditional Tigris kalak raft of reed, wood & inflated goat skins, it's ≥a few days travel from Mosul to Baghdad. _____ g. Hebrew from p 54, Ozar Massaoth, J. D. Eisenstein, 1926 NY, 352 p. A different, text, with scholarly intro. & 441+critical notes: A New Version of *Sibbuv* by R. Pethahiah of Regensburg: אלה הדברים אשר סיפר הרב ר' פתחיה מביהם Warsaw (Warszawa) U. 258, fol. 127,v-131v. 15th cent., Abraham David, in: *Kobez al Yad*, 13 (1996), pp.235-169 [see also "Narrative of the Embassy of Ruy Gonzalez de Clavijo to the Court of Timour", who went N & E of Mt Ararat in ~1403-4 & gives a detailed description of two peaked snow capped mountain with saddle mt. between – one higher than the other. However, he didn't travel south to Cizre or Nisibis.] ___

Just four miles due north of the city is a narrow gorge cutting through the wall. This cut makes the sides of the wall on the east and west look like two mountains. As can be seen in the images on page 191, the overall effect, in shape and scale, strongly resembles the valley between Mount Eval and Mount Gerizim.

CONSISTENT WITH CHAZAL, GEONIM AND RISHONIM [628]

Could this be the place where Noah's Ark came to rest? It is consistent with four of our most reliable earlier sources[629]:

1. **TARGUM ONKELOS[630] translates "upon the Mountains of Ararat" as על טורי קרדו [upon the mountains of the Kurds];**
2. **BIREISHIS RABBAH 33:4 explains "upon the Mountains of Ararat" as על טורי קרדונייא "upon the mountain range Cordyene" [Kurdish Mts.], noted as "a district E. of the Tigris & S. of Armenia."[631]**
3. **TARGUM YERUSHALMI[632] has: *"And the ark rested in the seventh month, which is the month of Nisan, in the seventeenth day of the month, upon the mountains of Qadron; the name of the one mountain is Qardania, and the name of the other mountain Irmenia; and there was builded the city of Armenia[633] in the land of the east."* ___**
4. **SAADIAH GAON (882-942CE) translates Mountains of Ararat into Arabic as "Mountains of Qurda" [634]**

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[628] CHAZAL: [חז"ל] acronym for the Hebrew "Chachmeinu Zichrono Levracha ", literally: "Our Sages may their memory be blessed". Our sages from 2nd Temple times times to the 6th century CE;
GEONIM: Heads of the two great Babylonian, Talmudic Academies of Sura and Pumbedita, accepted spiritual leaders of the Jewish community world wide ~600-1030CE;
RISHONIM:Our sages from close of Academies in Bavel to writing of Shulchan Aruch.~1030-1550CE

[629] Three other earlier sources are: **A.** the *Syriac Peshita* version of the Torah. It has: ܒܩܘܪܕܘ *'on Kordu'* for on the Mountains of Ararat. It's particularly import'nt here because scholars say it was written by Jews in N. Syria ~1800-1850 yrs ago. At that time & place, Jews would've been very familiar with Armenia & its giant mountain. If that mt. was seen by them to be "the mountains of Ararat", they'ld presumably have said so. "Is the Peshitta a Non-Rabbinic Jewish Translation? The Syriac Version of the Old Testament: An Introduction by Michael P. Weitzman" *Rev.* by: Yeshayahu Maori. *p.* 411-18, The Jewish Quarterly Rev., New Series, V. 91, No. 3/4, Jan-Apr, '01 ___ **B.** A commentary on 'the mountains of Ararad' [sic] by Eusebius of Emesa prepared in the decades after the conversion of the King of Armenia in 301CE says "the Hebrew says Ararad [sic] but the Syrian (says) 'on Kordu'." A Syrian in Greek Dress, R. B.Ter Har Romeny, 1997. P.271-2, Peeters Pub. **C.** Berosus the Chaldean quoted by Josephus has "in Armenia, at the mountain of the Cordyaeans." See footnote **693.** **D.** However, according to at last one scholrar, the Armenians themselves did not identify the Mt now known as Ararat with the biblical mountain until much later. "Their reason, I believe, was this, that Masis was already the scene of a similar and native Armenian legend, with which on religious grounds they scrupled to identify the story they now read in the Scriptures. Masis was anyhow a center and focus of pagan myths and cults, which the author enumerates; and it was only in the eleventh century, after these had vanished from the popular mind, that the Armenian theologians ventured to locate on its eternal snows the resting-place of Noah's ark." F.C.Conybeare's book review in The American J. of Theology, V.5, #2 (Apr.,1901), p. 335-7 of "Ararat Und Masis. Studien zur armenischen Altertumskunde und Litteratur. Von Friedrich Murad. Heidelberg: Winter, I900. P. I04. M. 7.

[630] Onkelos [~35-120 CE] Righteous Convert, Talmid of R. Eliezer ben Hirkanos & R. Yehoshua b. Chananya. Wrote Aramaic targum of the Torah. Nephew of a Roman Emperor who persecuted Jews. But see Akilas, footnote R, p. 45, who wrote a targum in Greek. These two names ref to one man.

[631] (Eng. trans. & notes by Rabbi H. Freedman, Soncino, 3rd Ed. 1983.);

[632] Also called Targum Yonasan, written 100's of yrs after Targum Onkelos. It's considered less reliable than both Targum Onkelos & Bireishis Rabbah.

[633] See map of region in Roman times, showing that Armenia extended to this area, on page 176.

[634] From p. 217 of Rabbi Saadiah Gaon's Commentary On The Book Of Creation transl. by Michael Linetsky, Jason Aronson , 2002 . This is particularly significant as at this time the nature of the Great Armenian Mountain would've been well known in Israel and Mesopotamia, where R. Saadiah lived.

It's also supported by an interesting comment by Ramban on the relative size of the Mountains of Ararat. Writing in Jerusalem about a century after R. Binyomin of Tudela, he said:

ולכן יקשה זה, כי הידוע בהר היוני שגבוה מהם הרבה מאד, וארץ ארט בשפל הכדור הקרוב לבבל.

"Hence, this difficulty arises: It is known that the Greek Mountain (Olympus) is very much taller than them[635], furthermore, the land of Ararat is in one of the lowest places on the planet, close to Babylonia."[636]

The peak of Mt. Olympus today is 2,917m high and is visible from the sea. The mountain known as Mount Ararat today is 5,137m above sea level and more than 4,200m above large areas of the surrounding plain on its north and east sides. These are the areas with most of the local population – the areas from which the mountain would most often be seen. He clearly didn't think the Ark came to rest on a mountain at least 4/5 mile higher than Mt. Olympus.[637]

A CONSISTENT SCENARIO

From all this, we might imagine that the Ark came to rest on a low rise toward the upstream side of the gorge, four miles north of Cizir[638]. The eastern side of that gorge is an extention of the highest peak in the area. The liquid water over that immediate area -- the kind of water that could float an Ark -- was at least 15 cubits deep. It was also over 800 cubits above today's sea level. The higher points—the tops of the mountains -- were blanketed to a depth of 15 cubits with water in other forms – including snow and ice. Most of the land – including the liquid water on the land -- had been covered with water in the form of dense mists, fogs and clouds. This covering not only made the mountain peaks invisible, it also obscured the difference between day and night. It blocked out much of the sun and chilled a good part of the planet [639] :

. . . זֶרַע וְקָצִיר וְקֹר וָחֹם וְקַיִץ וָחֹרֶף, וְיוֹם וָלָיְלָה...

"…seedtime and harvest, and cold and heat, and summer and winter, and day and night…" **[GEN 8:22]**

were suspended for much of a year. After a full solar year, with the atmosphere cleared and the earth dried, Noah and those with him went <u>out</u> – as they were told – not <u>down</u>—as

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[635] Plutarch (46 – 120 CE), believed that Mt. Olympus, as measured by Xenagoras, was the highest mountain in the world. See: "History of Determinations of the Heights of Mountains" Florian Cajori, Isis, v. 12 #3, p 482-514, 1929. . _____

[636] Translation after p 215-216 at source, supra -- see footnote 584.

[637] For images of Mt Olympus and the mountain known as Ararat today, see fig. e & f,p. 191]

[638] However, the fact that our Sages, who lived in Mesopotamia from the time of the Babylonian exile, only say Kurdish Mountains – an area covering tens of thousands of square miles – and give no more precise location, should make us wary of more exact claims. Still. we can't just say that what R. Tudela heard was merely the result of the local Jews assimilating a Moslem tradition that the Ark came to rest … على الجودي… *"…on Judi…"* [Koran, Sur. 11:44]. [Though the Koran doesn't say 'mount', " most Moslem scholars identify this as Mount Judi. Some scholars see Judi as derived through Syriac from Qardu: "A Reflection on Two Qur'anic Words (Iblis and Judi), with Attention to the Theories of A. Mingana", G. Said Reynolds, J. Amer. Orient. Soc. 124.4 (2004) _____ .] Assuming a purely Moslem origin of this site would not explain the efforts of Jacob of Nisibis centuries before - a subject we will come to on pages 177-8.

More importantly, it could be that the exact site is like the grave of Moshe, which we learn is "*in the land of Moab, opposite Beth Pe'or. And no person knows the place of his burial, unto this day.* [Dev. 34:6,] It is hidden to prevent it from becoming a site of idolatry [Sotah 14a]. That this might've happened with the exact site where the Ark came to rest is suggested by Sennacherib's worship of a piece of its wood, as discussed below: see footnote 683. However, with Moshe's grave, the Torah says that "no person knows…" , with the site of the Ark, the Torah does not say this. So, it may be that someday we will know, even if in times past we didn't.

[639] See footnote 614, D & E. Also, snow & clouds would reflect much of the sun's energy back into space. This would be partly offset by the clouds reflecting infrared back to the earth – from the hot water that covered the land. This would also help to reduce the length of time the earth was effected -- preventing a multiyear catastrophe.

would be required if they had been on any significant height .[640] They went out through a gateway -- a door in the Ark and Gateway to the New Land – just as we'd enter what would become the Land of Israel through a similar Gateway over eight centuries later.[641]

NATURAL CAUSES -- FROM TORAH AND CHAZAL?

Before the Yam Suf parted and בְּנֵי-יִשְׂרָאֵל -- the Children of Israel -- crossed on dry land, we read, at Exod 14:21:

וַיֵּט מֹשֶׁה אֶת-יָדוֹ, עַל-הַיָּם, וַיּוֹלֶךְ יְהוָה אֶת-הַיָּם בְּרוּחַ קָדִים עַזָּה כָּל-הַלַּיְלָה, וַיָּשֶׂם אֶת-הַיָּם לֶחָרָבָה; וַיִּבָּקְעוּ הַמָּיִם.

"…God caused the sea to go back by a strong east wind all the night, and made the sea dry land…"[642]

It was an event involving the selection of the righteous and the rejection of those who weren't: saving alive those who chose to follow The Derech Hashem -- The Way of God -- and drowning those who followed the 'derech hateveh' -- the "go with the flow" way of nature [643]. It involved water and floods, destruction and dry land. It was also, seemingly, based on a natural phenomenon.

What basis among natural phenomena could there have been for the Mabul – a singular event with a singular word – far beyond anything we've experienced in the way of torrential floods[644]? The most likely candidate appears to be a collision with a "long period" comet.[645] It might have been massive chunks of space ice, totaling hundreds of cubic miles in size, crashing into the deep sea at long-period-comet speed ~ 100,000 mph. Such an event would've had the energy to raise tens of thousands of cubic miles of water high into the atmosphere, trigger the eruption of hot springs and volcanoes and propel mountain sized tidal waves across much of the world.[646] It's also consistent with two accounts in the Talmud:

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[640] **A. Gen 8:16,17,18,19 & 9:10 all have the verbs based on צא "go out" . There's no hint of going down, unlike Moses on Mt. Sinai who is told to go 'down' [Exod 19:14, etc], or Pharaoh's daughter who went down to the Nile [Exod 2:5]. "The usual rise of the river at Cairo is 25 feet, at Thebes, 38 ft and at Aswan 49 ft." p48 Nile: Notes for Travelers in Egypt, E. A. Wallis Budge, 1890. B. In 2 major collections of midrashim, each utilizing scores of sources, there are no mentions of Noah going "down" either in connection with leaving the Ark or after. Rabbi Moshe Weisman, "The Midrash Says", Bireishis, 1980, p 100 [only 'Orthodox" sources]; Louis Ginzberg, "Legends of the Jews"V. 1, 2nd ed. 2003, p. 150-3. [Orthodox & non-Orthodox. Jewish sources]**

[641] **According to Seder Olam, the Flood ended in 1657 & we entered the Land of Canaan near Shechem in 2488. See fig. C & D , p. 191.**

[642] **Interestingly, the word that's usually translated as dry land has the same root as the one we've translated, following Abarbanel, in Gen 7:22, as "destroyed." It's also prefixed with a לְ - lomed – meaning "to."However, at Exod 14:16, God tells Moshe:**

וְאַתָּה הָרֵם אֶת-מַטְּךָ, וּנְטֵה אֶת-יָדְךָ עַל-הַיָּם--וּבְקָעֵהוּ; וְיָבֹאוּ בְנֵי-יִשְׂרָאֵל בְּתוֹךְ הַיָּם, בַּיַּבָּשָׁה.

And lift thou up thy rod, and stretch out thy hand over the sea, and divide it; and the children of Israel shall go into the midst of the sea on dry ground.

The word used here for " on dry ground" is -- בַּיַּבָּשָׁה -- the same word used when the Children of Israel actually cross the sea [Exod 14:22], the same word used after they crossed [Ex. 14:29] and the same root word used at the end of the Mabul [Gen 8:14]. So, at Ex. 14:21, the meaning of the word לֶחָרָבָה can be "to destroy." To destroy what? [see next note].

[643] **Pharaoh's Army – the symbol of those who follow the way of nature – who went "horse first" into the sea. [Exod 14:23]**

[644] **The word מַבּוּל MABUL in Tenach is only used for the flood of Parshas Noach. There are several other words that are used for ordinary floods. Even so, there is nothing in the parsha of the Mabul that was created בערב שבת בין השמשות** 'at twilight of Shabbat eve' **like the פי הארץ 'mouth of the earth' in the parsha of Korach, [Num 16:32-3; Perkei Avos 5:9].**

[645] **R. Joshua ben Hananiah mentions a comet [Horayos 10a] *"A certain star rises once in seventy years and leads the sailors astray."* That the Mabul was caused by a comet was suggested by theologian-mathematician-astronomer William Whiston (1667-1752) in A New Theory of the Earth ... (1696). He succeded Isaac Newton [1642 1727] at Cambridge in 1702. We will look more closely at Prof. Whiston and his theory in the section cited in the next note.**

[646] **See, in this sefer: The Mabul and a Comet/Earth Impact?**

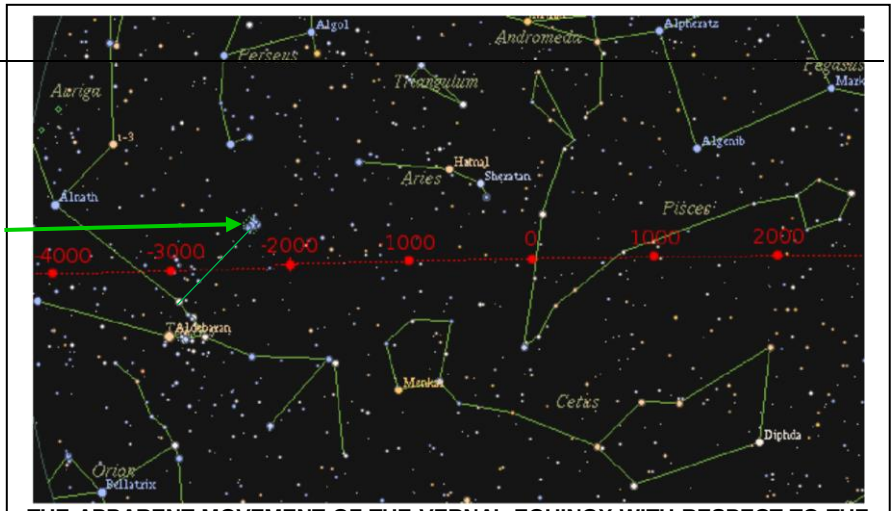
דבר אחר לשבעת ששינה עליהם הקב"ה סדר בראשית שהיתה חמה יוצאת ממערב ושוקעת במזרח

"In the seven days before the Mabul "the Holy One, blessed be He, reversed the order of nature, the sun rising in the west and setting in the east." [647] SANHEDRIN 108b

ומתוך ששינו מעשיהן שינה הקב"ה עליהם מעשה בראשית והעלה מזל כימה ביום ונטל שני כוכבים מכימה והביא מבול לעולם

…because they [mankind] perverted their ways, the Holy One, blessed be He, changed for them the work of creation and made the constellation of Pleiades[648] rise … [in midday[649]]…and took two stars from the Pleiades and brought a flood on the world…. ROSH HASHANA 11b

Our Mesorah also gives some insight into something else that's key to understanding the whole Parsha of the Mabul: Where did the journey of the Ark begin? We try to answer that question in the next section.



THE APPARENT MOVEMENT OF THE VERNAL EQUINOX WITH RESPECT TO THE PLEIADES, ORION, TAURUS, ARIES & PISCES OVER THE LAST SEVERAL THOUSAND YEARS. 0=0 CE https://upload.wikimedia.org/wikipedia/commons/b/bd/Equinox_path.png

[647] The near approach of a comet might look like the sun rising in the wrong part of the sky.

[648] **A. 1.** מזל כימה Constellation Pleiades [plee-ə-deez] is a tight cluster of 7 related blue stars –unlike other constellations. It's mentioned in Amos 5:8 & Job 9:9 & 38:31. In each place it's linked with the constellation Orion- כְּסִיל to which it's visually close in the night sky. The fact that only מזל כימה is mentioned in this context strengthens the idea that it's more the appearance of the constellation – like a fragmented comet – that's important here. Both are shown, with instructions for locating them in the night sky, in the **Star Chart in this sefer.** [But see p. 47-50 of H.W. Guggenheimer's commentary on Seder Olam where he brings other traditional meanings of מזל כימה see footnote 588] **2.** Constellation Pleiades is in Constellation Taurus, in the Zodiac, close to the ecliptic "a great circle on the celestial sphere representing the sun's apparent path during the year, so called because lunar and solar eclipses can occur only when the moon crosses it." It was at the position of the sun at the vernal equinox ~4,200BP & seen as 1st of the constellations, possible reason Aleph comes 1st in Alpeh-Bes. Seen by Babylonians as tho' the "bull of heaven" was sacrificed to the sun in the spring. See "Pleiades In Ancient Mesopotamia", Lorenzo Verderame, *Mediterranean Archaeology and Archaeometry, v.16,#4,(2016),p.109-17* **3.** The axial precession of Earth, also known as the *precession of the equinoxes*… is the movement of its rotational axis, whereby the axis slowly traces out a cone. It goes through one such complete precessional cycle in a period of ~26,000 years or 1°/72 years, during which the positions of stars will slowly change in both equatorial coordinates and ecliptic longitude. Over this cycle, Earth's north axial pole moves from where it is now, within 1° of Polaris, in a circle around the ecliptic pole, with an angular radius of ~23.5°. Being an oblate spheroid, Earth has a non-spherical shape, bulging outward at the equator. The gravitational tidal forces of the Moon & Sun apply torque to the equator, attempting to pull the equatorial bulge into the plane of the ecliptic, but instead causing it to precess. The torque exerted by the planets, particularly Jupiter, also plays a role. ~4400 years ago, the Pleiades - מזל כימה - in the constellation Taurus-- coincided with the rising of the sun at the Vernal Equinox. [https://en.wikipedia.org/wiki/Precession#Astronomy. Wikipedia Oct. 6/'19.] Today the Pleiades - מזל כימה rises with the sun in May and the vernal equinox coincides with the constellation Pisces rising with the sun.

B. The word כְּסִיל translated in the context of stars as 'Orion', is, elsewhere in Tenach, most frequently translated as a 'fool'. In the Tenach there are actually at least five words translated as 'fool', each with its own nuances. There are several examples of each use – only one is given here. In Aleph-Bes order they are: **1.** אֱוִיל quarelsome: Pr. 20:3. "Keeping away from strife is an honor for a man, But any fool [*eviyl*] will quarrel."; **2.** כְּסִיל arrogant: [The constellation is visualized as a giant hunter – like the giant hunter Orion in Greek mythology – with raised club in hand.] Pr. 14:16. "A wise man is cautious and turns away from evil, But a fool is arrogant and careless."; **3.** לוּץ scorner, scoffer, mocker: Pr. 13:1 "A wise son *heareth* his father's instruction: but a scorner heareth not rebuke" **4.** נָבָל disgrace: Pr. 17:21 "He that begetteth a fool *doeth it* to his sorrow: and the father of a fool hath no joy."; **5.** פֶּתִי open to easy persuasion, gullible: Pr. 14:15. "The naive [*pethiy*] believes everything, But the sensible man considers his steps."

C. Could אֱוִיל be the source of the English word 'evil' and פֶּתִי be the source of the English 'petty'? Tho' there are many words in English that etymology experts say are from Hebrew, these two are usually not considered to be among them.

[649] 'Midday' is from the Peirush haRokeach , note 38, p 67 of Baal Haturim Chumash, R. Avie Gold, 2004. Others say it rose opposite to its ordinary position in the sky. The Flood began by day.

אומרים שבעים

FROM THE MOUNTAINS OF ARARAT TO THE TOP OF PISGAH

PART 2

WHERE DID THE JOURNEY OF THE ARK BEGIN?[650]

II GATEWAY TO FOREST SCIENCE AND CARPENTRY

Compared with the questions addressed in PART 1, on the nature and extent of the Mabul – the Flood – and where the Ark came to rest, this question appears almost inconsequential. Why should it even matter? The Torah appears to consider it so unimportant that – seemingly – it says nothing about it.

It turns out that this question is quite important – and the Torah and our Mesorah tell us what we need to know about where the journey of the Ark began. If it began in Southern Mesopotamia – near Ur or Babylon – or further north – in the area of Nineveh -- the Ark would ordinarily have been expected to follow the way of the Flood waters as they receded and returned to their natural place.[651] Noah and all that were with him would have been washed into the sea. Anyone watching Noah build the Ark – our medrashim say he was working on it in a public place for over a century -- would've pointed out this problem. They might've said to Noah:

> ***"You say that your God told you that if we don't repent He will send a great Flood to punish us for our sins and that this Ark that you are building according to God's plan will save you and your family. Foolish man!! Anyone can see that you have no way to steer or power your craft and it will just end up floating into the Ocean. If this is what God has told you, we don't want any part of your foolishness -- or your God."***

With such a design built in such places, Noah would probably have had a problem persuading even his own family to get on board with him. So it's likley that Noah did not build the Ark in a place where it could easily be washed out to sea.

Before Noah was given any of the dimensions of the Ark, he was told what to make it from. HaShem said to Noah:

עֲשֵׂה לְךָ תֵּבַת עֲצֵי-גֹפֶר...

Make thee an ark of gopher wood…**[GEN 6:14]**

Chazal say that this was a kind of hard, resinous 'cedar' wood. As noted above [footnote 601, par. 2], it was probably *Cupressus sempervirens*, the Mediterranean Cypress[652]. Where was Noah

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650 This Part 2 was inspired largely by a very interesting paper by physicist Alan E. Hill: "Quantitative Hydrology of Noah's Flood". For apparent want of any traditional source on the starting point of the Ark, he looked outside of our Mesorah and found Shuruppak, an ancient city in Southern Mesopo-tamia. [Fig B. p. 191] This city, ~400 miles from the feet of the Mountains of Ararat, is the starting point of the wise hero in a flood story discovered by archaeologists. [See, e.g. "Noah's Ark and the Ziusudra Epic…" R. M. Best, 304 p, '99]. Dr. Hill then calculated the wind needed to blow the Ark upstream against the downstream current of the Flood. The result was a hypothetical hurricane force wind blowing in one direction for 40 days. Even this assumed that the Ark had a prow to reduce drag by a factor of 2.5 & that the Ark had a draft of at most 10ft. However, just as I realized that we have no Mesorah that Noah had any difficulty getting down from wherever the Ark came to rest -- & no Mesorah of a Miracle to overcome potential difficulties -- I also realized that we have no Mesorah that the Ark had a prow or that it was pushed up-stream or in any one direction by any unusual wind. This led me to look more closely at what our Mesorah actually said about the movements of the Ark.

651 וַיָּשֻׁבוּ הַמַּיִם מֵעַל הָאָרֶץ, הָלוֹךְ וָשׁוֹב...

And the waters returned from off the earth continually… **GEN 8:3**

652 **A.** A combination of tree-ring & C14 dating was used with cedar wood objects from Ancient Egypt to show a significant climate change episode led to social disorder in the Ancient Middle East in the general time frame of the Mabul. "High-precision dendro-14C dating of two cedar wood sequences from First Intermediate Period and Middle Kingdom Egypt…"J of Archaeolog Sci 46 ('14) 401e416, Sturt W. Manning, et al, citing, among other things: Third Millennium BC Climate Change And Old World Collapse [proc. of NATO Advanced Research Workshop on Third Millennium BC Abrupt Climate Change and Old World Social Collapse, held at Kerner, Turkey, 9/19 - 24, 1994] / ed. by H. Nuzhet Dalfes ... Springer '96 (NATO ASI series: Ser. I, Global environmental change; V. 49). See citations to these for current work.

B . "The tremendous tonnage of ancient copper slag on Cyprus suggests that the Cypriot copper industry collapsed around 300 AD simply because the island ran out of cheap fuel. The slagheaps suggest a total production of perhaps 200,000 tonnes of copper, and that in turn suggests that fuel equivalent to 200 million pine trees were cut to supply the copper industry, forests 16 times the total area of the island…The landscape of Cyprus today (and Greece, and Turkey, and Lebanon, and in fact most of the Mediterranean seaboard) is quite unlike its appearance 5000 years ago. The magnificent cedar forests of Lebanon were felled largely for timber for buildings and ships, but copper smelting must take most of the blame in Cyprus." Chapter 4: THE BRONZE AGE, Richard Cowen, Senior Lecturer Emeritus, UC Davis richard@blueoakfarm.com http://mygeologypage.ucdavis.edu/cowen/~gel115/115ch4.html

going to get thousands of tons of such special wood – and the pitch to be used with it? [653] Such trees don't grow in the flood plain of Mesopotamia. They don't grow in boggy soil and require more rain than can be had in the arid lands of that great river valley.[654] If he bought it from merchants, some of it would probably have been stolen – as the people of that generation were preying on each other. If he cut existing trees in the foothills around Mesopotamia, he would be contributing to the the violence and speed of the seasonal river floods[655]. It would also be likely that existing groves of great, awe inspiring trees would have been used for idol worship.[656]

Noah understood that the Ark should embody the righteousness and purity that would ultimately save the world. All of the things that it was made of must embody those qualities. So where did Noah get so many tons of such special wood? The Midrash says, he grew the trees himself.

דעלמא מאריה אמר כך להון אמר כדין למה אמרו וקוצצן ארזים נוטע נח היה שנה ד"ק שכל עלמא על מבולא מייתי דהוא

For a whole hundred and twenty years Noah planted cedars and cut them down. On being asked, 'Why are you doing this' he replied: 'The Lord of the universe has informed me that He will bring a Mabul on the world.' **MIDRASH RABBAH 30:7**

In doing this, he set the example followed by the Tsadikim of the ages thereafter.[657]

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[653] גֹּפֶר -- *gopher* -- the wood, is not only similar to the root of Cupressus, K-P-R, but it is also similar to the word for pitch כֹּפֶר : *kopher*. כֹּפֶר has the root idea of cover or protect. *Cupressus semp*., which combines strength with insect and water resistance, may have been the best wood to cover or protect a house and may have been the source of pitch as well. In Hebrew ג and כ are sometimes interchangeable and produce words of related meaning. Radak notes that וַיִּסָּכְרוּ at Gen 8:2 is spelled with כ instead of the usual ג . This root is also spelled with כ instead of ג at Ps. 63:12. כִּי יִסָּכֵר פִּי דוֹבְרֵי-שָׁקֶר. … "for the mouth of them that speak lies shall be stopped." [Hachut Hameshulash, R. Eliyahu Munk, p213] [Rashi explores this with the words רָגַל & רָכִיל at Lev 19:16. This is apparently based on Sefer Yetzirah]

[654] There is a difference between where a tree can be made to grow and where it will grow best – with its most desirable characteristics. This type of cypress tree grows best in sunny areas with well drained soil and where the winds in summer are not too hot and dry. These conditions are met on the lower slopes of the Kurdish, Lebanon, Taurus and Zagros Mountains.

On the phrase "gopher wood, " the Midrash Tanchuma gives additional detail : Noah *"repented and then he planted the cedars... and he watered the cedars until they grew tall."* The Midrash says that the people questioned him while he was planting, watering and cutting the cedars. At each stage he explained to them what he was doing and why. At each stage the people scorned him.

[655] The trees & thick soil beneath them in the foothills, slow the melting of the snow & soak up water coming down from the heights. Noah would've seen that the rapid deforestation of these slopes in his lifetime was making the flooding of the valley increasingly dangerous and erratic. Cutting such trees might be seen as stealing from society.

[656] The Aitz Yoseph notes on '*planted cedars'* in Midrash Tanchuma , that cedar was used for idols, citing Isaiah 44:14.

[657] a. Avroham not allowing his sheep to graze in areas that might belong to others [Midrash Rabbah 41:5 on Gen 13:7] and not taking anything from Melech S'dom [Gen 14:23]. See also on this verse in the author's companion sefer אוֹת הִוא לְעֹלָם - **A SIGN FOREVER**.]

b. ומהיכן היו הקרשים. יעקב אבינו נטע אותם בשעה שירד למצרים. אמר לבניו, בני, עתידים אתם להגאל מכאן והקדוש ברוך הוא עתיד לומר לכם משאתם נגאלין, שתעשו לו את המשכן, אלא עמדו ונטעו ארזים מעכשיו, שבשעה שיאמר לכם לעשות לו את המשכן, יהיו הארזים מתוקנים לכם. מיד עמדו ונטעו ועשו כן.

Where did the boards [of the Mishkan] come from? Yaakov Avinu planted [the trees that would be made into] them at the time he went down to Mitzrayim… **MIDRASH TANCHUMA, PARSHA TRUMA, SIMAN TES, SHEMOS 25:5**

c. **Moshe** " …וַיִּנְהַג אֶת-הַצֹּאן אַחַר הַמִּדְבָּר…"…and he led the flock to the farthest end of the wilderness…"**EXOD. 3:1 Rashi: שלא ירעו בשדות אחרים, להתרחק מן הגזל "to distance himself from theft – not to graze the land of others"**

d. **Dovid HaMelech, before he was king, led the sheep to the wilderness to avoid damaging others' land: Midrash Rabbah Shemos 2:3, citing I Sam 17:28, fulfilling the Mishnah B.K. 79b** [footnote cont. next p.]

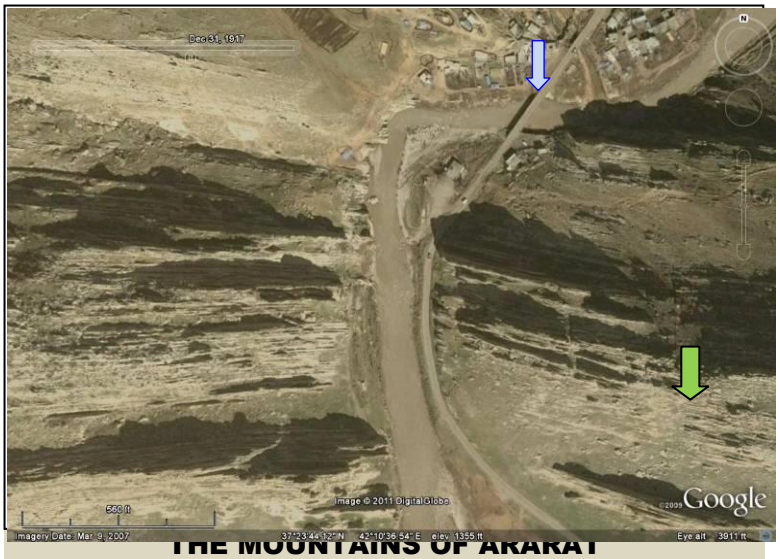
Where did Noah grow all of those trees? Here too we have an answer. The Torah says:

וַתֵּלֶךְ הַתֵּבָה עַל-פְּנֵי הַמָּיִם ...

...and the Ark went upon the face of the waters. [GEN 7:18:]

The Midrash says the Ark went like the distance *"from Tiberias to Susitha"* (Hippus), (Bireshis Rabbah 32:9). This is ~10±2 km[658]. It's all our Mesorah says on the lateral movement of the Ark[659]. So the place where the Ark came to rest was about seven miles from the place where it started[660].

To the extent we can rely on the version of the report of R. Binyomin of Tudela that says the Ark came to rest "near two mountains", we can get a good idea of where the journey of the Ark began. [661] We already have from R. Binyamin that the Ark came to rest four miles from Cizir [662]. We've also



THE MOUNTAINS OF ARARAT
SATTELITE VIEW OF THE TWO MOUNTAINS [c] BETWEEN WHICH THE ARK CAME TO REST

WHERE NOAH'S ARK CAME TO REST
KASRIK GORGE: AT ↓
LEFT: FACING SW FROM LIGHT BLUE ARROW ON THE ROAD IN SATTELITE PHOTO ABOVE.
RIGHT: FACING ~WNW FROM GREEN ARROW IN SAT. PHOTO. SHOWING STRATA TURNED 90° ON SW SIDE OF GORGE.

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e. א"ל ר' חייא אנא עבדי דלא משתכחה תורה מישראל דאייתינא כיתנא ושדיינא ומגדלנא נישבי וציידנא טביא ומאכילנא בישרא ליתמי ואריכנא מגילתא ממשכי דטביא וסליקנא למתא בה מקרי דרדקי וכתיבנא חמשא חומשי לחמשא ינוקי ומתנינא שיתא סידרי לשיתא ינוקי לכל חד וחד אמרי ליה אתני סידרך לחברך

'R. Chiyya said "*I make it so that Torah is not forgotten in Israel because I bring flax and plant it & make nets & trap deer. I feed the meat to orphans & I make parchment from the deerskin and go to a town without a teacher of children. I write the 5 books of Chumash for 5 children & I teach the 6 orders of Mishna to 6 children & I tell each child to teach his part to the others.*"'*Kesuv103:,ARAMAIC* ____ *ENGL.* ___ ____ *& Bav Matz., ENGL* _____ He was among the last of the Tannaim & 1st of Amoraim & lived 1st in Bv. then, Isr. [180-230+CE]See footnote 239-B&C

f. The Vilna Gaon reportedly said prayer/Torah study isn't effective in a shul with even one stolen nail. However, I've not found a reliable source for this. R. Dovid Kaminetsky, at the time focusing on the life/work of the Vilna Gaon, said he wasn't aware of this statement.[Elul, 5777, NLI] see footnote 242, p 66 re R. Dovid Soloveitchik's Jerusalem Yeshivah.

g. Noah's desire to avoid any taint of theft might have led him to grow his own food, make his own tools & invent labor saving devices"Noah invented the plow... and other labor saving tools." MIDRASH TANCHUMA, GEN. 11 ____:נולד נח התקין להם מחרשות ועגלות קרדומות וכל כלי מלאכה Perhaps he also invented a water powered saw & other machines to help him build the Ark

[658] From Galillee shore of *Tiberias to W. edge of Susitha on the mesa is ~ 10km . Range is ~8 – 12 km.* See pdf p173 _____

[659] We also have that, thru the Mabul, 'the Ark rested quietly "as a ship in port"' העומדת כספינה' [מדרש תהלים, S. Buber, 1891]

[660] If the Ark had gone to a remote, unfamiliar place, like the top of a giant mountain, Noah wouldn't have noticed the extent of the destruction.

[661] אבל עמר בן אל כטאב לקח את התיבה מעל שני ההרים ועשה אותה כנסת לישמעאלים .

'...but Omar ben al Khataab took the ark from [near] the two mountains and made it into a mosque for the Ishmaelites.' [near added by ASA] [See footnote 624 for explan.] M. N. Adler at note 29 on p. לג of his Hebrew text says that MS *"R omits* מעל שני ההרים *;[MS's] AB insert* ראש*."* The basic text, says M.N.Adler, is assigned by "some competent judges" to the 13th cent.; he dates MS R. to 1429-30; Ms B he says is "much later than [the 14th or 15th cent.] ...may well be as late as the 18th cent.*"* ; MS A is based on printed editions of 1543 & 1556.

[662] For more of the quote in Hebrew and source, see pages 161-2, supra. _____

already found -- on pages 162-3-- what look like "two mountains" within four miles of the city. It remains to see what's about 10km from this area to get a good idea of where the Ark might have started from. On the topographic map -- on page 173 -- we can see the city of Cizir, the gorge – Kasrik Gorge -- that looks like two mountains and what lies at an ~10 km radius upstream of that gorge and near fresh water — Kumcati Village.

The images on the previous page show Kasrik Gorge close-up. Today, it has a river ~100ft. wide and a two lane truck route running through it. The vertical orientation of the strata shown in the right photo makes them subject to rapid erosion by the freeze/thaw cycles that occur many times each winter[663]. The rocks would also have been eroded by the spring floods of the sand laden river. On top of this, they would've been quarried by the local people even as the gorge was widened to make room for a road. 4,000 years ago, this gap would've been narrow enough to catch the 450 X 75ft. Ark.[664]

For 120 years[665], near what are today Kumcati Village and Kizilsu Stream, Noah could have planted and watered his trees, built the Ark and tried to persuade the people to repent. And if you say that the land these days is almost barren, with hardly a tree in sight, consider the photos below, where one of the last surviving ancient groves of the Cedars of Lebanon - "Cedars of God"- stands walled in, guarded and alone on a similar landscape – the result of centuries of unsustainable grazing & timber cutting.[666-A]

CEDARS OF GOD, LEBANON

VIEW FROM THE GROUND SATTELITE VIEW

SHOWING DESERTIFICATION OF SURROUNDING, UNPROTECTED LAND

GOOGLE EARTH

It's a place – like Be'er Sheva, where Avroham and Sarah put their tent – outside of town but at a crossroads.[666-B] It was a crossroads for both people and animal life. In this

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663 In Bryce Canyon, Utah, 2-4ft/100yrs of erosion in sedimentary rock is produced mostly by the freeze/thaw process.

664 The Ark's dimensions are: "length of the ark three hundred cubits, the breadth of it fifty cubits" [Gen 6:15].

665 ~3 generations –the avg. of the father to son gap just before & after the Mabul. It's also 3x the years that it'ld take to cure the Jews after Egypt. It's a sign of the patience of Hashem, and the persistence of the evil of those generations.

666-A.1 This forest of ~10Ha, since '98 part of a UNESCO World Heritage Site, [loc. 34.243,36.048,2km alt.,~65km NE of Beirut]Wall & guards to protect grove proposed 1879 by Capt. S.P.Oliver after visit. [p.204-6,v.12, Gardeners' Chronicle.8/16/1879]."H.E. Rustem Pasha, [Governor-General,Lebanon,1873–83]...has surrounded this grove with a well-built stone wall with two strong gates, and appointed guardians to prevent the ravages of the goats on the young trees, and to compel travellers to pitch their tents outside..."[C.W.Wilson, p. 25,v3. Picturesque Palestine, 1881-4; Gates removed & no guard – vandalism; 10/27/1891 p.14 Times[Lond.]; See: 'The Beshare Cedars of Lebanon As Seen By Travellers', F. N.Hepper,Arch.&Hist. In Leb.#14,2001;'The Deforestation of Mount Lebanon', M.W.Mikesell, Geogr. Rev. V. LIX 1/'69 # I, p1-28.Fig.10, p.10, shows natural range of cedars on Medit. Slopes of Mt. Leb. – continuous band ~130km long & 2-10km wide, ~60kHa. In 1995, total cedar forest in Leb.=1.7kHa, much degraded. "The Cedars of Lebanon:Significance, Awareness and Management…" R. Masri, 11/'95 This loss was from timber cutting & grazing in historical times. [See also footnote 168 D.2&3 on microclimate created by fog drip of big 'pine' trees on mountains.] A.2 Earlier slash & burn agric. on lower & flatter lands – starting thousands of yrs before -- destroyed much of Eurasian temperate forest. "The Anthropogenic Greenhouse Era Began Thousands of Years Ago" W. F. Ruddiman, *Climatic Change* 61: 261–93, '03.

666-B Midrash Rabbah Bireshis 52:1/ 'between Kadesh and Shur', Gen. 20:1.

place, now so spare, Noah could find the animals that would go with him – from the mountains and from the plains; from the swamps and from the desert lands[667]. Here Noah could meet people from all walks of life. Here he could try – like Avroham and Sarah – to teach all people the way of God.

WHY THIS PARTICULAR PLACE?

Still, we might reasonably ask: Weren't there many places in the world that would have satisfied these requirements? Why, in particular, the area near Kasrik Gorge? Why also should the people have listened to Noah's flood predictions? The answers to these two questions are closely related and are consistent with the Rachmunis – the Mercy -- of Hashem.

The Kasrik Gorge area was an excellent place to monitor the state of the upper Tigris River. It is the rapid melting of what may be years of accumulated mountain snow in this region that leads in almost every century to devastating and unpredictable floods hundreds of miles downstream in lower Mesopotamia[668]. The people who built their cities to take advantage of the fertility of the Mesopotamian flood plain would have quickly learned that they needed some way to monitor the river far upstream. But the floods travel very quickly. By the time "Pony Express" riders could make it downstream to warn the people of an oncoming flood, there would be little time to evacuate[669]. What these Cities of the Plain needed was a signaling system that could get the warning of a flood downstream in 2 hours instead of 2 days. Such a system would give the people time to take food and animals miles away to higher ground.

The Kasrik Gorge area is an excellent base for such a signaling system. The Gorge itself is actually at the end of a geological toe extending from Mt. Judi, whose peak – just ten miles away -- rises a mile above the Mesopotamian plain to its south. From this peak, once forested but now bare – fire and smoke signals[670] visible 90 miles away [671] could be sent night and day.

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[667] It should be remembered here what was said above in WHAT ABOUT THE PENGUINS?, that the water creatures, penguins and similar animals weren't included as targets of the Mabul. For similar reasons, insects & related creatures were not explicitly targeted. This leaves vertebrates that had some relation to those people who, as previously noted, "stood up against God". As this is being written, scholars have identified 6,199 species of amphibians, 8,240 species of reptiles, 9,956 species of birds and 5,416 species of mammals. Most live in remote parts of the world and, like the penguins, had nothing to do with those who "stood up against God". The average adult weight of these ~30K land based vertebrate species is probably <1/2 kg. The avg. adult mammal species weighs ~0.9 kg. (Nicholos Hotton ____– get exact ref). 70% of species of mammals are rodents, bats and shrews. In one recent year ('06), experts 'discovered' 185 species of mammals, 196 of reptiles, 108 of amphibians & 37 of birds– a total of 526 in these 4 groups -- ~ 2X the yearly rate of 'discovery' in the prior 2 centuries. Larger species could've been taken as juveniles – as suggested by Chazal in the case of the "Re'em". As already seen at footnote 614, Chazal say that the Mabul's hot water should have melted the Ark's sealant -- but didn't. Thus, they say, miracles were involved [ZEVACHIM 113B] . _____

[668] Mesopotamian Civilization: The Material Foundation. Daniel T. Potts,1997, Cornell U. Press. p.7-13 _____

[669] The Pony Express of the American West used fresh horses every 8-10 miles and fresh riders every 75 miles. Avgerage speed over flat land was ~12 mph – including time to change horses. 15 mph was fast for this type of service. See: Saddles and Spurs: The Pony Express Saga, R. W. & M. L. Settle, 1955. It's ~1K miles from Kasrik Gorge to the Persian Gulf. The Tigris in flood at Baghdad runs ~12mph. N. of Bagdad, the river slope is 7X greater & speed much greater too. *Potts,* supra, p.7-8.

[670] "All the Benjaminites raised fire signals" from a letter found at Mari / Tell el-Hariri, Middle Euphrates, written ~3700 years ago. *"With their aid, the ancients were able to communicate with great rapidity over considerable distances"* p 427 of: The Ancient Near East: An Anthology of Texts and Pictures. James B. Pritchard, Daniel E. Fleming, 2011, Princeton U. Press.

[671] This distance, d, to the horizon may be calculated from the height, h, above the plain, if we know the radius, r, of the earth. With r ~4,000 miles, & h=1 mile, d= $((4000+1)^2 - 4000^2)^{1/2} = 8001^{1/2} =$ ~89.5 miles. For towers or hills of h = 100 ft, the distance between two observation points would be ~25 miles – if they were otherwise bright or big enough to be seen. For a given type of

With a chain of hills and towers[672] extending hundreds of miles along the flood plain, the emergency signals could be transmitted in time to save tens of thousands of lives and make large scale agriculture workable for the Cities of the Plain.

Noah, growing his trees in this area, might have become one of the most knowledgeable people when it came to Tigris Floods. Noah, the righteous man in his generations, may have even become the Flood Watcher. From Mt. Judi, Noah, the Flood Watcher, could send signals down river of coming floods – in time to save lives. When we read:

אֵלֶּה, תּוֹלְדֹת נֹחַ--נֹחַ אִישׁ צַדִּיק תָּמִים הָיָה, בְּדֹרֹתָיו: אֶת-הָאֱלֹהִים, הִתְהַלֶּךְ-נֹחַ.

These are the generations of Noah. Noah was in his generations a man righteous and whole-hearted; Noah walked with God. GEN 6:9

it may point to Noah's central role in the functioning of that society – they were "his generations" because he made their way of life possible. He was known to those generations for his righteousness and his whole heartedness – including, in this scenario, his complete reliability when it came to the flood warning system[673].

So, when Noah warned 'his generations' of an impending flood that would be greater than any they'd seen[674], he wouldn't have been just a voice in the wilderness. People would have known who he was and that he knew more about floods than anyone.[675]

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fire, the visibility of the fire would be a function of its angular size at the viewing point. A fire viewed at 100 miles would have to be 16X larger in area to be seen as easily as a fire 25 miles away. Atmospheric instability & dust would also reduce visibility with increased distance. A large fire needn't have been 'bonfire' with high flames & rapid fuel consumption. It could've been confined to a relatively shallow pit, fueled with coals or oil & made visible at a distance with a large tiltable-rotatable, gold covered mirror.

If the fire signal carried a code – based on the way it was moved or turned on and off (by means of something that blocked the view of the flame or stopped the smoke), the larger the fire, the more difficult this would be. Some code would be necessary to distinguish between a fire produced, for example, by lightening and one produced as a flood warning. A secret code would offer some protection against deliberate false alarms. [What about smoke & fire signals among other people – the Indigenous People of N. America, for example?]

[672] The Mesopotomian ziggurats (stepped pyramids) may have been used to send and receive such signals.

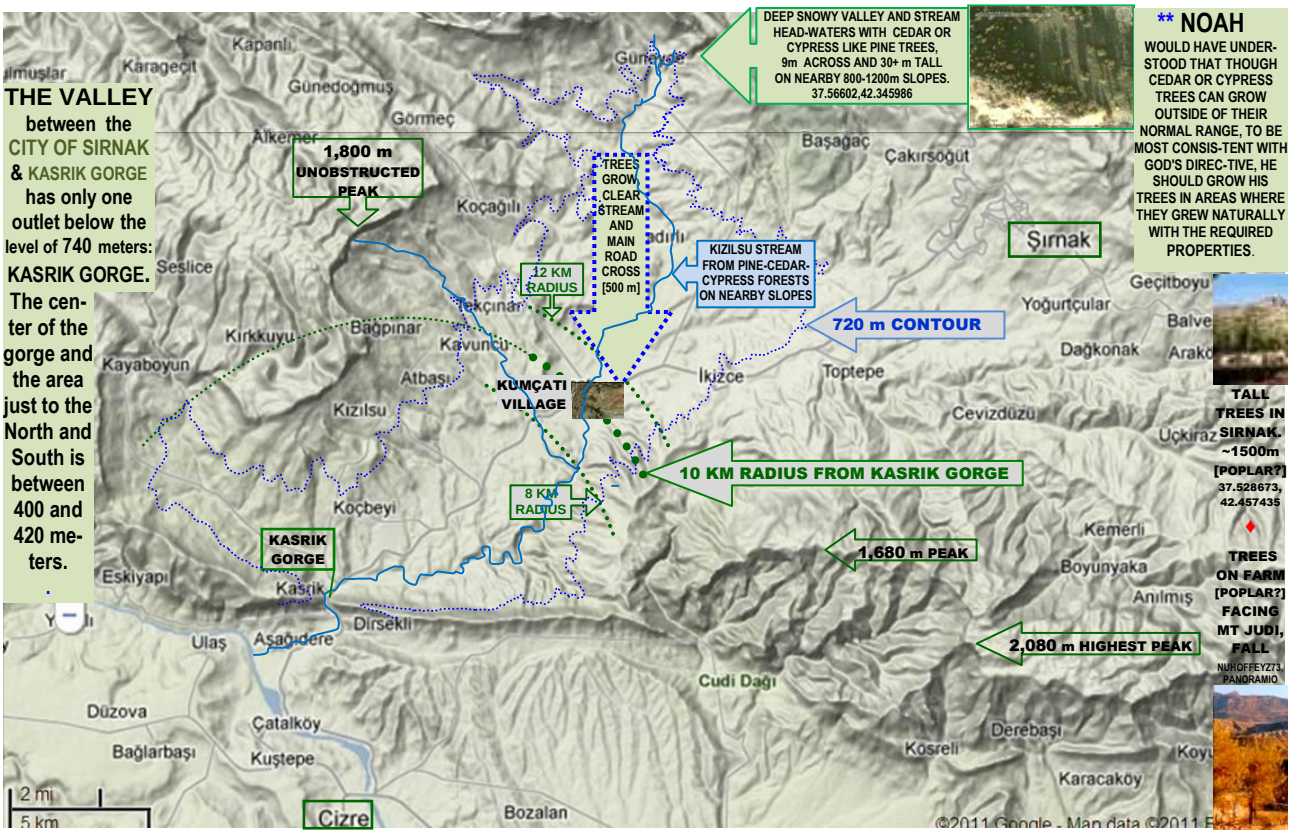
[673] If those in charge of such a signal system weren't reliable, it would fail. People wouldn't know if a signal was false – to produce an evacuation without a flood and allow others to conquer the area. Corruption of a fire signal system is noted at Rosh Hashanah 22b-23b, ____ where the enemies of Israel sent a false fire signal to sow confusion. The fire signal system transmitted information concerning the start of Jewish Holidays across distances of over 500 miles. The signals were transmitted in steps, some of which may have been of as much as ~100 miles. The relay point locations and the types of wood and fuel that were used for the fires are also gven. It was easier to implement compared with a flood warning system: it was only used by one ethnic group -- Jews -- at the new moon -- one dark night each month. See also: "Tidings and Instructions: How News Travelled in the Ancient Near East", Alan D. Crown, Journal of the Economic and Social History of the Orient, Vol. XVII, Part 3 (Sep., 1974),pp. 244-71 ____

Aeschylus, the Greek poet who lived about 2500 years ago, wrote, in his play AGAMEMNON, of a system of fire signals sending a message over 300 miles in a night. The system in the story was established by Clytaemnestra, the wife of King Agamemnon, to alert the Greeks in the city of Argos of victory at Troy – about 3200 years ago.

[674] The floods of the Tigris may have increased in both severity & crest velocity within Noah's lifetime. As more of the forests around the snow covered mountains of the Tigris basin were cleared – mostly where logs could be easily floated downstream -- there were fewer trees and less forest soil to soak up the water and delay it from rushing down in a flood. Noah would have seen this even as he was growing his trees.

Hashem provided those generations with a man they could believe – as later, he provided the Cities of *another* Plain – Sodom and Gomorrah – with a man who should have been believable. In both cases, Hashem was merciful and patient. In both cases, there weren't even ten righteous in the midst of the people.

SEE IN THIS SEFER: a. **How Did the Generation of the Mabul Get So Bad? …**
b. **The Mabul and a Comet : Earth Impact** ; c. **To Move the Earth**



WHERE TREES GROW TODAY WITHIN BLUE CONTOUR,
NEAR GREEN DOTTED LINE, CLEAR STREAM AND MAIN ROAD IS

WHERE THE ARK IS MOST LIKELY TO HAVE BEEN BUILT [676]

The liklihood that it was actualy built here is the product of the probabilities of the elements that went into finding this site. The weekest link is the story told to R. Binyomin by the Jewish scholars of Cizir. Supporting their claim, he doesn't report any other community that he visited or Torah scholar that he met, claiming another location. My intuitive sense is that the liklihood is 2-10% for the area within a 5km radius of Kumcati Village.

[For cautionary note, please see footnote 638.]

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[675] **A.** Noah as Flood Watcher would have seen that a rare but possible combination of a fast flood from snow melt and a heavy rain could be devastating. This may have been part of his thinking as he built the Ark and collected the animals. **B.** This place & scenario would've also made Noach a human bridge between the planters of the plains, the shepherds of the hills and the hunter-gatherers of the mountains and forests. He would understand, incorporate and save the best of all of them.

[676] . "Olive trees grow very well in Southeastern Anatolia and there are many olive orchards in this region."(personal communication: Prof. Dr. M. Boydak, 3/12/'11). Grapes grow in this area: "picturesque vines" were seen in the higher/northern areas of the City of Sirnak 9/22/'10 _____

FROM THE MOUNTAINS OF ARARAT TO THE TOP OF PISGAH

PART 3

THE VIEW OF

יהודה בן בתירא

R. YEHUDA BEN BATHYRA OF NETZIVIN / NISIBIS

This section should be very short. As far as we know, there is no comment by R. Yehuda ben Bathyra[677] of Nisibis[678] on the Ark. The reason a whole section has been devoted to his view is that from his famed Yeshiva in the city of Nisibis, he could literally see the mountain on which Noah's Ark reportedly came to rest. It's less than 70 miles[679] of mostly flat road to this place -- at least according to the reports given to R. Binyomin of Tudela. As this was a major trade route and as R. Yehudah ben Bathyra lived centuries before the time of Omar ben al-Khatab, we would expect that the Ark would be there for him if it was there for the renowned 2nd Caliph.

We would also expect him to know about it and to comment on it. We have scores of references to him and his school – but nothing about the Ark. It is reasonable to assume from this that the Ark reportedly taken by the Caliph for one of his mosques was not there in the time of our great Tanna.

To understand how this may have happened, we should first go back to the time of Noah and appreciate what the Ark meant to Noah and his descendents. As far as our mesorah is concerned, the Ark was not a holy object. Its materials were free to be used for any other purpose[680]. In the generations following Noah, his descend-

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[677] **He was a Tanna from an illustrious family. The word בתירה is found 39 times in the Talmud Bavli, 70 in the Talmud Yerushalmi and 22 times in the Tosefta – a total of 131, before including midrashic sources** http://bodesh.tripod.k12.il/cgi-bin/bodesh/search_adv.pl?search=%D7%91%D7%AA%D7%99%D7%A8%D7%94

For a sense of his importance, the following quote puts him and his school in the company of the greatest Rabbis of his day: *"Our Rabbis taught: 'justice, justice shalt thou follow,'* [Dev.16:20] *this means, Follow the scholars to their academies. e.g.. R. Eliezer to Lydda, R. Johanan b. Zakkai to Beror Hail, R. Joshua to Peki'in, Rabban Gamaliel [II] to Jabneh, R. Akiba to Benai Berak, R. Mathia to Rome, R. Hanania b. Teradion to Sikni, R. Jose [b. Halafta] to Sepphoris. R. Judah b. Bathyra to Nisibis, R. Joshua to the Exile, Rabbi to Beth She'arim, or the Sages to the chamber of hewn stones."*[SANH. 32B] [What about R. Meir?]

[678] **In the Talmud, the city is called: נציבין , *Netzivin*. Today, it is called Nusaybin. נציבין is found 18 times in 13 places: in Talmud Bavli 9, Talmud Yerushalmi 8, Tosefta 1**

[679] **All the manuscripts of the Itinerary of R. Binyomin -- except the one in the British Museum (BM) that is considered most complete and reliable by the editor of the critical text, Rabbi Adler - have the following statement before the journey to Cizir. *"Thence it is two days to the city of NISIBIS (Nasibin). This is a great city with rivulets of water, and contains about 1,000 Jews."* This insert does not contain a mention of the Jewish leaders of the community – which we would expect if R Binyomin stayed long enough to meet them.**

[680] **Noah might have used part of it for the altar and offerings that he made after the Flood:**

וַיִּבֶן נֹחַ מִזְבֵּחַ, לַיהוָה; וַיִּקַּח מִכֹּל הַבְּהֵמָה הַטְּהֹרָה, וּמִכֹּל הָעוֹף הַטָּהוֹר, וַיַּעַל עֹלֹת, בַּמִּזְבֵּחַ.

"*And Noah builded an altar unto the LORD; and took of every clean beast, and of every clean fowl, and offered burnt-offerings on the altar."* **[Gen. 8:20]**

None of the wood that was used either for the construction of the Taberancle in the desert or in the construction of the Temple of Solomon in Yerushalyim was said to come from the Ark. All of the wood for the Tabernacle is described as Shitim wood -- usually translated as accasia – not the kind of wood used in the Ark.Our Mesorah says it was from trees planted by Yaakov on his way to Egypt. Though the wood for the Temple of

ents began to build cities in Mesopotamia[681]. Though the predominant building material for these cities, as we learn, was mud brick[682], the major way to support a roof for the largest permanent structures was heavy timber. Heavy boards would also be needed for large doors and for the gates of cities. We could imagine then, that in a short time, the great mass of timber that made up the Ark was dispersed across relatively treeless Mesopotamia and the surrounding area.

For some of the most important buildings, traditions may have preserved the connection between key beams and the great Ark from which they came. Thus, we learn that nearly 1500 years after the time of the Mabul, Sennacherib, on his return to Assyria ---

" found a plank of Noah's ark. 'This', said he, 'must be the great God who saved Noah from the flood…"[683]

It does not say that he took the beam out of the Ark. Similarly, when we learn that Haman's 50 cubit high gallows [684] came from Noah's Ark [685], we don't have to understand that it came directly from the site where the Ark came to rest. [686]

[FOOTNOTE CONTINUED] Solomon as well as the wood for the palaces of both David and Solomon was somewhat like that used in the Ark – "Cedars of Lebanon" – all of it was supplied from the relatively nearby Mountains of Lebanon and none is said to have come from the Ark. For the Temple: 1Kg 5:6-10; David's home 2Sam 5:11; For Solomon's home: 1Kg 7:2.

681 "...*Babel, and Erech, and Accad, and Calneh, in the land of Shinar.*" Gen 10:10; "*Out of that land went forth Asshur, and* וַיִּבֶן *builded Nineveh, and Rehoboth-ir, and Calah,"* [The word for '*builded* ' here is the same as the one for '*builded'* when Noah built the altar.] Gen:10:11; *"and Resen between Nineveh and Calah--the same is the great city."* Gen 10:12.

682 Gen 11:3. The scaffolding to build the Tower of Babylon probably also required heavy wooden beams.

683 ... If I go [to battle] and am successful, I will sacrifice my two sons to thee', he vowed. But his sons heard this, so they killed him, as it is written, And it came to pass, as he was worshipping in the house of Nisroch his god, that Adrammelech and Sharezer his sons smote him with the sword etc [SANH 96A] "and they escaped into [אֲרָרָט אֶרֶץ] the land of Ararat" [2 KINGS 19:37.] On this, the Aramaic Targum Jonathan has לארע קרדו *to the Land of Kardu . [suggesting the wood was found near the Kurdish Mountains*] where they released the Jewish captives confined there in great numbers. With these they marched to Jerusalem, and became proselytes there [from p 269-70, v. 4, Louis Ginzberg, citing Tosefta-Targum 2 kings 19:35-37 in his note 61 (p 364 Vol VI). This, he says, is from editions published in 1494 in Leira and 1872 by Lagarde in Leipsic (not seen by author)]... Shemaiah & Abtalion were the descendants of these two sons; [GIT 57B];

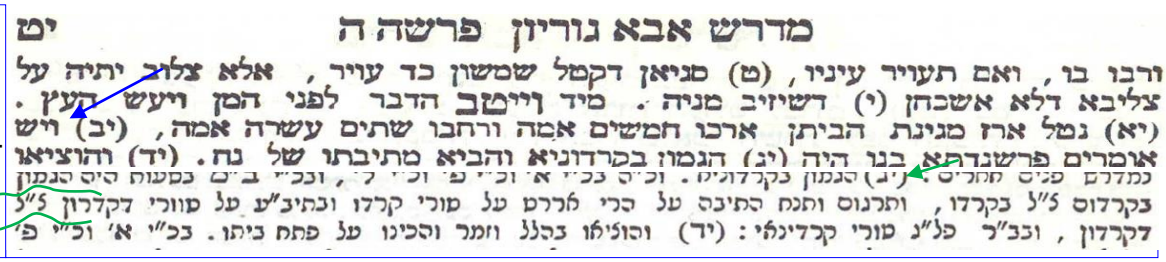
684 Esther 5:14

685 Midrash Abba Gurion on Esther 5:14 *"and there are those who say Parshandasa, Haman's son , Governor in Kardonia, brought it from the Ark of Noah." [at blue arrow]*

ספרי דאגדתא על מגלת אסתר : הלא המה קבוצת מדרשים שונים : א. מדרש אבא גוריון... ב. מדרש פנים אחרים... ג. מדרש לקח טוב / טוביה ב"ר אליעזר, נאספו לאגודה אחת עם הערות ותקונים והגהות ומראה מקומות ופתח דבר בראש / ממני שלמה באבער מלבוב.

Sifre de-agadeta al Megilat Ester. Includes the texts of Midrash Aba Goryon; Midrash Panim aḥerim; and Midrash Leḳaḥ ṭov by Tobiah ben Eliezer. Originally published: ווילנא : ראם, ז"תרמ, 1886 Buber, Salomon, 1827-1906.

FOOTNOTE YUD-GIMEL SHOWS DIFFERENT VERSIONS OF THE TEXT. NOTE THE TRANSPOSITION OF ד 'DALED' & ר 'RESH'.



686 Though the midrash -- shown above -- says that it was 'brought from the Ark of Noah', since it was brought within hours of its request, it would've required that the Ark had come to rest [cont.]

The same processes that preserved the connection between particular pieces of wood and the Ark and that preserved some of the wood in the Al-Aqsa Mosque for 2700 years[687], would have also preserved the knowledge of the Ark's resting place. With the approaching exhaustion of the supply of original wood, the people in the area where the great Ark once stood might have built replicas – perhaps including some of the original identifiable pieces or even pieces just 'touched by the orginal Ark' -- to preserve its memory and the importance of their location. This would supply relic seeking pilgrims with the physical attachments that they sought.

We might imagine then that whatever such replicas had existed, they'd been largely destroyed, removed or all but forgotten before the time of R. Yehudah ben Bathyra. He may also have seen whatever was left as either insignificant or inauthentic. After his time, at least three factors may have led to the construction of a new replica:

1. The rise of competing traditions that the Ark came to rest on the giant mountain known today as Mount Ararat[688] or other mountains in the general area[689] . 2. The relic finding activities of St. Helena – particularly

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in the vicinity of Shushan, the Capital, which is in a very flat, ~sea level area of S. Mesopotamia (SEE LOCATIONS AT FIG B, PAGE 191), more than 30km from the nearest hills. It is ~500 km from what the Torah calls "the Mountains of Ararat" and what was called 'Kardonia' in the time this Midrash was written. [It is considered a relatively late, post Talmudic midrash] It is more likely that the Governor of Kardonia, the province where the Ark had come to rest, had already brought wood that he understood was from Noah's Ark from that area and had it on hand in Shushan for other purposes.

[687] See footnote 626, paragraph 4

[688] This might have begun some time BCE –as suggested in a report attributed to Nicolaus of Damascus [see footnote 693]. It may have increased in prominence with the conversion of the King of Armenia in ~301CE at the site of a fire worship temple. That temple was located to highlight the remarkable seasonal changes in the ountains capped peak of the giant volcanic mountain. [see images & comment on p. 191] . At the same time, available texts of Josephus, who lived 37-100CE , say "the ark settled around a mountaintop in Armenia" [Whiston, book 1, chapter 3 sect. 5, found on _____ However, in the time of Jospehus, the Armenian Kingdom extended far south of the present country of Armenia and included a province called Korjayak as shown on the map at right. More than 700 years before this, the Kingdom of Urartu, which gave its name to the Mountains of Ararat, was largely coextensive with what is shown here as Greater Armenia, particularly along the southern border, including the vicinity of Cizir. _____

[689] There are several other sites that claim to be at or close to where Noah's ark came to rest, including:
1. Dinar, Turkey, -- formerly called Apamea Kibotos, 1000 km W of Cizir, [See fig. B, p 191]. It's at the foot of a mountain that rises ~800 m from the plain. They struck coins, like the one at left, from the 2nd to 3rd cent. CE onward, showing Noah and his wife with the ark. [fig 313, p. 667, Digital Historia Numorum: A Manual of Greek Numismatics by Barclay V. Head at :_____ See also: "The Ark at Celaenae", p88-98, in: The Maeander Valley: A Historical Geography from Antiquity to Byzantium, Cambridge U. Press, Peter Thonemann, 2011; [This source cites additional locations for the Ark]; Noah And The Ark On Ancient Coins, M. Tameanko _____ ; Yeb. 115b, on the journey of the exilarch Isaac, from Corduene to Apamea];

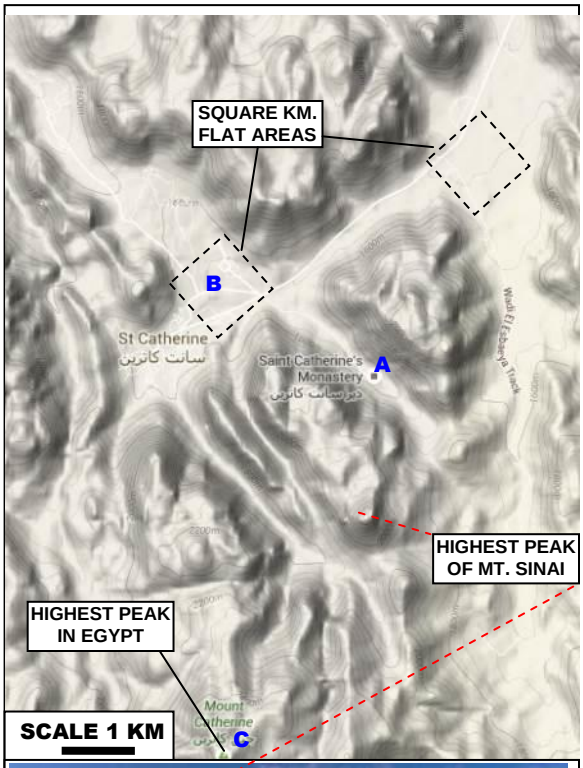
27 MM DIAM. BRONZE COIN MINTED FOR SEPTIMIUS SEVERUS, 192-211CE. NOAH'S NAME, IN GREEK AS NOE, APPEARS ON ARK. THERE IS ALSO A DOVE WITH AN OLIVE BRANCH & A RAVEN.

2. Sinjar, [see map above] "famous city …for the legends which relate that the ark of Noah rested near here, see, ["Mu'jam al-buldan" , completed 1228CE, a literary geography, covering the history, ethnography, and myths related to the places, by Moslem scholar, Yaqut al-Hamawi.] torn. iii. p. i58f." It is at the foot of a mt that rises 700 m above Mesopotamian plain, ~150km SSW of Cizir. Emphasis added. From The Book Of Governors: The Historia Monastica Of Thomas Bishop of Marga A. D. 840. Found at _____

her 'finding' of Mt. Sinai[690], **3.** A reported attempt of the non-Jewish religious leader and scholar, Jacob of Nisibis, to find the Ark near the top of a relatively high mountain in the area [691].

All three of these efforts by non-Jews were based on assumptions that what they were seeking was associated with a high mountain. As already noted, our mesorah with respect to one of these, Mt. Sinai, is just the opposite. We say that God chose Mt. Sinai because it was a very low and modest mountain. Unlike its taller neighbors, it had not been used for idol worship[692].

We might expect the place the Ark came to rest to be similar – a relatively low and modest place that had not been used for idolatry. So, we might imagine that the Jews of the Kasrik Gorge area had preserved a tradition of where the Ark had actually been – in the gorge at the feet of the mountains. The tradition was reinforced by a report of the finding of the spot by one of the most outstanding non-Jewish religious scholars in the area. This was the same Jacob of Nisibis who we have just seen apparently finding the the site of the ark near the



"MT. SINAI"

ACCORDING TO THE AGENTS OF ST. HELENA, LOOKING ~S. FROM THE AREA NEAR 'A' ON ABOVE TOPOGRAPHIC MAP, ~N. OF ST. CATHERINE'S ['BURNING BUSH'] MONASTERY.

[692] SEE FOOTNOTE 590

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[690] ~246-330 CE, Empress & mother of Emp. Constantine I, given essentially unlimited funds to find Christian 'relics' in the Holy Land 326-28CE & establish churches on sites of her finds. This includes discovery of the 'burning bush' in Sinai Peninsula – reportedly shortly after the time of the Empress – and on her inspiration.

Both Christians & Moslems have found 'Mt. Sinai' [2285m] near the S. end of the Sinai Peninsula. Christians established a monastery ~700m below, & ~2km N of the peak, at the foot of this mt. near the site of what they say was the original 'burning bush'[A on map at right]. It isn't a low mountain peak on a high plain but is among the the high peaks in a very rugged mountainous area with the nearest large flat area ~15km away & 1400m lower. There's a much nearer, relatively flat but irregular area ~3.3km NW ~700m below the peak – in the town of St. Catherine [B on map]. This is ~6km from 2,629m Mt. St. Catherine,[C on map] highest mt. in all of Egypt.

R. Benjamin of Tudela notes this location in his sefer. On the return leg of his journey he visited Alexandria, giving substantial details on this great city, include. that there are 3,000 Jews. Then there is a side tour through Damietta-Caphtor, at the eastern end of the Nile Delta on the Mediterranean Sea. He says there are 'about 200 Jews' there. A days journey south brings one to Simasim [or Timasin , near Lake Timsah] 'which contains about 100 Jews'. A further 7.5 days & 150 miles south through several stops along the Sinai Peninsula leads one to "Mount Sinai'. He gives details of the several communities en route, but there are no Jews mentioned beyond Simasim.

'A day's journey from thence takes one to Mount Sinai. On the top of the mountain is a large convent belonging to the great monks called Syrians'. At the foot of the mountain is a large town which is called Tur Sinai; the inhabitants speak the language of the Targum (Aramaic)[A]. It is [close to [B]] a small mountain, five days distant from Egypt. The inhabitants are under Egyptian rule. At a day's journey from Mount Sinai is the Red Sea, which is an arm of the Indian Ocean. We return to Damietta.' A. 'Tur' = Mountain in Aramaic. B. Bracketed words aren't in the Hebrew & were inserted in the English w/o comment by the Editor. Hebrew on p. קז 107, Engl. on p.77.

Unlike the story of the Ark at Cizir, where our text says that there were 4000 Jews, this piece gives no names of any Jews within the area. Even in describing Alexandria, there are no names of Jews and no mention of synagogues or places of Torah learning. It's clear that what was given in Cizir was understood by the Jews of the city to be true. What's given at 'Mt. Sinai' has no Jewish hechsher.

[691] Died 338(350?)CE, Syriac saint. 2nd bishop of Nisibis (from 308CE); signatory at the Council of Nicaea in 325; first Christian to search for the Ark of Noah:

On "*Sararad mountain which was in the borders of the Ayraratean lordship, in the district of Korduk'*...[at a] *difficult place near the summit* ...[with the assistance of an] *angel of God* ...[he found a] *board which appeared to have been split from a large piece of wood by an axe ...and to this very day that miraculous symbol is preserved by them* [in Nisibis]..." [The loc. is consistent with Mt. Judi. [Emphasis added]

This account was given in Book 3, Chapter 10 of "History of the Armenians" , by Faustus of Byzantium [P'awstos Buzand]. He is thought to have written this in the 5th cent. CE. The translation by R. Bedrosian is from an Armenian text. From this we might think that there was no Ark as such to be found either in the time of Jacob of Nisibis or, a century later, in the time of P'awstos.

top of a high and difficult mountain. The account here, unattached to any Armenian interest in the giant snow capped 'Ararat', suggests that the location was at "Mt Kardo", near "the skirts of the mountain". It makes no mention of any ascent or any difficulty in accessing the site.

> ***'Mount Kardo is…the spot upon which the ark rested and… was swallowed up by the earth. [In]…a story told in the history of Mar Awgin [A],… Mar Jacob made up his mind to go to the Mountains of Kardo…to bring back a plank therefrom…and upon his arrival at the skirts of the mountain an angel met him and led him to the spot where the ark had been swallowed up. The Lord then appeared to him and told him that he had arrived at the place wherein the ark was laid …a plank therefrom … [was received by Mar Jacob] and returned to Mar Awgin who straightway made from it a cross which he wore upon his neck, and which he afterwards buried in his monastery.' [B]*** **[emphasis added]**

This is consistent with a low lying, modest place -- one that would've presented no problems of "getting down" for Noah and his entourage. It was also a place where people could readily come – as they reportedly had in centuries past – to take small pieces of what was left of the Ark.[693] The Jews of the area then took remedial action to protect what they felt was our mesorah. They built a new replica – of old wood, looking like it was almost completely souvenired -- in time to be taken by the 2nd Caliph. Some of this wood may've been authentic.

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[693] **"*Sefer Yuchasin* also records that for many generations people would come to the spot where the ark rested to view its remains, and the sick would come there to be healed" [p265, Bereishis /Genesis, sect. 1, 2V. ed. . 1986, Mesorah Public.] *Sefer Yuchasin* is apparently a reference to a sefer of that name by Rabbi Abraham ben Samuel Zacuto [~1452-1515 CE]. It was written in Tunis in 1504 CE. A more exact reference and quote by Jehiel ben Solomon Heilprin is given in the box below. It appears to be taken initially from Josephus, who, as quoted below, says that he took it from a work by a Chaldean Priest [of avoda zara] who lived centuries before:[C]**

'Now all the writers of barbarian histories make mention of this flood, and of this ark; among whom is Berosus the Chaldean. For when he is describing the circumstances of the flood, he goes on thus: **"It is said there is still some part of this ship in Armenia, at the mountain of the Cordyaeans; and that some people carry off pieces of the bitumen, which they take away, and use chiefly as amulets for the averting of mischiefs."** Hieronymus the Egyptian also, who wrote the Phoenician Antiquities, and Mnaseas, and a great many more, make mention of the same. Nay, Nicolaus of Damascus,[64BCE-~4CE] in his ninety-sixth book, hath a particular relation about them; where he speaks thus: "There is a great mountain in Armenia, over Minyas, called Baris [D], upon which it is reported that many who fled at the time of the Deluge were saved; and that one who was carried in an ark came on shore upon the top of it; and that the remains of the timber were a great while preserved. This might be the man about whom Moses the legislator of the Jews wrote."'

ט ותנח התיבה על הרי אררט הנקרא ארמיניא ועד היום יש רושם שמה, ובימים הקדמונים היו מתרפאים מהם כמו התריאק בזמנינו (יוחסין מאמר ה' זמן ב'), בארץ קוט, ושם ארבעה

ALUF HASHENI, TES-VOV

סדר הדורות : קורא הדורות מראש ימות עולם...

Heilprin, Jehiel ben Solomon, ca. 1660-ca. 1746.

[# From יוסף בן מתתיהו [Flavius Josephus] 37-100CE, Antiquities of the Jews, Bk I, Ch. 3, Pr. 6, transl. by W. Whiston [1667-1752] from the original Greek, found at ____] [emph. added] One wonders why St. Gregory (~ 257- 331CE) of Armenia & his Royal & Ecclesiastical Associates didn't launch a quest for the Ark on 'Mt Ararat" if they had a local tradition or knew of these words of Josephus &/or Nicolaus? Why Mar Jacob of *Nisibis*?

[A] Mar Awgin, aka St. Eugenios [died ca. 379CE] founded a monestary at Izla, just North of Nisibis.

[B] THE BOOK OF GOVERNORS, the Historia monastica of Thomas, bishop of Marga, A.D. 840, edited from the Syriac manuscripts in the British museum and other libraries, by E.A. Wallis Budge, 1893, p. 628, note 2, citing Paul Bedjan, a priest of the Chaldean Catholic Church (1838 –1920) Acta Martyrum Et Sanctorum, vol. 3. Paris, 1892, pp. 435—437. On p. cxxvii of his introduction, Budge notes that a monastery was built by Jacob of Nisibis on the site where the relic was found , not far from the village of هڒبه ڒ srgwg' Sargūgā] "whither Sharezer fled when he had slain his father Sennacherib." ____ It was "at the foot of the mountain, not too far from the Ark"[but, according to Harrak, not yet located] p 169 of "Tales About Sennacherib: The Contribution of the Syriac sources," by Amir Harrak, in The World of the Arameans, v.3, '01, p. 168-89.

[C] Commenting on this piece in Josephus, Prof. Louis Feldman writes: "Niether Biblical Antiquities nor the rabbis [of the Talmudic period] cite external evidence for the historicity of the Flood, nor do they claim that the remains of the Ark are still to be seen." , p. 35, note 243 to Book 1, par 95 [see footnote 590 for a complete reference.] Prof. Feldman is one of the world's leading authorities on Josephus and a Shomer Shabbes Jew.

[D] This suggests that the giant mountain of Armenia – known today as Mt. Ararat – was already a contender for the resting place of the Ark before the advent of Christianity – perhaps as a result of the presence of Jews there from the time of the Persian Exile. At the end of the preceding paragraph,(Bk 1, Ch. 3, Par. 5) Josephus writes: *"…the Armenians call this place, The Place of Descent; for the ark being saved in that place, its remains are shown there by the inhabitants to this day."* _____ However, Armenia in the time of its king, Tigranes the Great, [reigned 95 -66 BCE] - just before Nicolaus wrote, extended from the Caspian to the Mediteranean. It included Damascus and the mountains around Kaskrik Gorge. _____

FROM THE MOUNTAINS OF ARARAT TO THE TOP OF PISGAH

PART 4

THE MABUL AND A COMET/EARTH IMPACT?

INTRODUCTION

The analysis here of a possible comet/Earth impact is based on what we have found the Mabul – the Flood – was about. As we determined, it was intended to:

1. Erase all those people who stood up against God. 2. Erase all the animals that had been corrupted by the people in the first group. 3. Keep Noah and all those with him in the Ark alive and reasonably well.

It was not intended to:

1. Kill the fish or other animals – like the penguins – that had no contact with humanity or were not corrupted by them. 2. Float an Ark over barren, uninhabited mountain peaks. 3. Make water behave in ways that it ordinarily does not behave.

THE KAMIL CRATER

45 m wide, 16 m deep, produced by ~5-10 ton Gebel Kamil iron-nickel meteorite that fell in S. Egytian desert, less than 4000 yrs ago. "Search for meteorites around Kamil crater ..." M. Di Martino, et al, Mem. S.A.It. Suppl. V. 26, 62, c SAIt '14. 'Thermoluminescence dating of the Kamil impact crater (Egypt)' Gian Paolo Sighinolfi,____ E. Sibilia, G. Contini, 26/1/2015, Such iron meteor falls may have led to the Egyptian term "iron form the sky" and the Greek term for iron "sideron." King Tut's burial dagger was made of meteoric iron. _____ See footnote 357-C: 50 ton iron-nickel Cape York, Greenland, Meteorite Group, mined by Inuit [Eskimo] for 1000 yrs.

To help us understand what the physical characteristics of the Mabul were, we have the principle developed from the insight of Sforno:

When the Torah gives us a seemingly all inclusive statement concerning anything in the Mabul that has to do with: A. Water; B. Covering Or Uncovering Mountains, & C. Visibility, we are free to assume the water is behaving in a relatively natural way.

SOME HISTORY

The idea that the Mabul was the result of a seemingly natural interaction of the Earth and a comet is not new. To some extent, this idea is reflected in the Midrash. There we learn that the generation that tried to build a Tower with its top in Heaven – the Tower of Babylon -- thought that the Flood came about as a result of a natural, periodic event. They rejected the idea that it was caused by God and that it was aimed at erasing wickedness from the Earth. They reasoned instead that it was a regular process– where the Heavens collapsed every 1656 years. They thought that by building great towers, they would "support the Heavens" and prevent their future collapse – or have a place to escape to in the event of another flood.[694] They were mistaken.

In more modern times – just three centuries ago – discoveries in physics and astronomy led to a reawakening of the idea. This time, it was a non-Jewish, deeply religious and conscientious scholar that led the way. That scholar was William Whiston, a protégé of Isaac Newton[695]. Newton had developed a theory of gravitation[696] and with it, a new theory

[694] Bireshis Rabbah 38

[695] William Whiston, honest Newtonian. James E. Force, Cambr. U. Press, 1985 - 208 p.. Also, Edmund Halley, paper read at the Roy. Soc., Dec. 1684, -- that the Deluge was the result of the 'Choc of a Comet' – cited by J.E. Force, p.53.

of planetary motions[697]. It became clear that comets were heavenly bodies – somewhat like planets in orbiting the sun in predictable trajectories.

The Reverend Professor Whiston – who succeeded his mentor, Newton, in the Lucasian Chair of Mathematics at Cambridge in 1702 [698] – thought that the Flood was the result of a close encounter between the Earth and a large comet. He analyzed the possibilities and promoted the idea in his book: A New Theory of the Earth: From Its Original, To the Consummation of All Things [699] .

He imagined the gravitational pull of a massive comet – *'a little more than a third part so big as our Earth'* that *'came 24 times as near as the moon'* [700] -- would open vast fissures in what he thought was a partly porous earth. The same gravitational force of the comet -- in a process directly analogous to tides -- would draw out the subterranean water that he saw as filling that porosity. The result would be a surge of water several miles deep -- enough to drown the highest mountains on our planet – including the three-mile-high Mt. Ararat. The tail of the comet would provide the "40 days and 40 nights" of rain.

The Reverend Professor Whiston was mistaken. The comets that we know of today – the same ones Whiston was observing[701] and many, many more – are typically less than a

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[696] **A.** The law of universal gravitation is: $F = (G \times m_1 \times m_2)/ r^2$ where: F is the force between the masses, G is the gravitational constant, m_1 is the first mass, m_2 is the second mass, and r is the distance between the centers of the masses. G ~6.674×10^{-11} N m^2 kg^{-2} . N= newton , the unit of force, m is meters, kg is kilograms. **B.** "…Aristotle saw no need to do…[experiments on gravitation or falling objects]; he knew by reason alone that a larger mass "must" fall more quickly than a light one, since it is the nature of earth-like elements to strive toward the center of the universe. Such was his authority that there are no records of anybody actually testing this prediction until …[the 6th cent CE] when the Byzantine scholar John Philoponus [Who may've been preceeded in this by Hipparchus _____ c. 190 – c. 120 BCE] wrote in a commentary on Aristotle: "If you let fall from the same height two weights of which one is many times as heavy as the other, you will see that the ratio of times required for the motion *does not* depend on the ratio of the weights, but that the difference in time is a very small one" (italics added)". From "Testing Einstein" _____

[697] The Laws of Planetary Motion published by Johannes Kepler betw 1609 & 1619 were explained by Newton as resulting from the combination of the law of gravitation and three more basic laws of motion. Kepler's 1st law of planetary motion is: "The orbit of every planet is an ellipse with the Sun at one of the two foci." The 2nd is: "A line joining a planet and the Sun sweeps out equal areas during equal intervals of time." The 3rd is: "The square of the orbital period of a planet is directly proportional to the cube of the semi-major axis of its orbit." Newton's laws of motion are: 1st The velocity of a body remains constant unless the body is acted upon by an external force. 2nd The acceleration a of a body is parallel and directly proportional to the net force F and inversely proportional to the mass m, i.e.: $F = ma$ 3rd The mutual forces of action and reaction between two bodies are equal, opposite and collinear. These laws were published by Newton in his book Philosophiæ Naturalis Principia Mathematica, 1687.

[698] The Lucasian Chair of Cambridge U., Engl. is widely regarded as one of the world's most prestigious academic posts. It was founded in 1664 & held for the first 5 yrs by Isaac Barrow, the key teacher of Isaac Newton. Barrow was an Anglican Clergyman, fluent in Hebrew, Greek & Latin as well as French, Spanish, Italian &, less perfectly, Arabic. He was also the discoverer of one of the fundamental aspects of calculus. He resigned his chair in favor of his student, Newton, then only 26. One of the rules of the Lucasian Chair was that its holder should not be active in the church. On this basis, Isaac Newton had himself excused from being ordained, which was compulsory for most fellows of the university at that time.

Newton was not a Jew or a Christian. He was described by John Maynard Keynes as "a Judaic monotheist of the school of Maimonides."[Newton, the Man, John Maynard Keynes, 1946 _____] In 1710-11, Rev. Whiston was expelled from the Lucasian Chair and from the University because of his theological writing – published in English. Keynes wrote, in the same piece: "It is a blot on Newton's record that he did not murmur a word when Whiston, his successor in the Lucasian Chair, was thrown out of his professor-ship and out of the University for publicly avowing opinions which Newton himself had secretly held for upwards of fifty years past." Perhaps Newton understood that his protégé would be able to do well enough without the university position – and he did.

[699] 1696 1st ed. , 1708 2nd ed. , 1722 3rd ed. 1725 4th ed. , 1737 5th ed. , 1755 6th ed.

[700] A New Theory of the Earth … p. 220, 6th edition, 1755. 587 pages

[701] He thought the great comet of 1680 might've been the one that caused the deluge [p. 463, supra]. It's understood today that its great brightness in 1680 wasn't due to its great size but to its very close approach to the sun. Most cometary nuclei are thought to be ≤16km across. The largest comet that's come inside the orbit of Saturn is the ~60km diam. Hale–Bopp. It's <1/300,000th of the vol. of the comet assumed in Whiston's analysis. Some may think a small piece of a neutron or white dwarf star [~5E17 & E4-E9g/cm3, resp.] might be able to pass through or near the earth without leaving any impact debris – as matter near enough to melt would be sucked in by its intense gravity – but current understanding is that such objects will quickly explode where created unless they have a mass comparable to a star. So, the flood & rain wouldn't start on a single day as in the Mabul or in our hypothetical comet scenario.

millionth as massive as he thought. More importantly, there is no vast reservoir of subterranean water that could – if released – drown the earth to a depth of several miles[702].

The main difficulty with Rev. Whiston's analysis was that he was looking for a mechanism that could do just what we've found to be unnecessary: drown the barren mountain peaks with liquid water several miles deep. If the Mabul of the Torah did not require such water, the way is opened up for other mechanisms for God to bring the Flood – analogous to the '*wind blowing all night' [Ex 14:21].* A possible mechanism appears to be an impact with a comet [703]. Here we'll look at what might have resulted from a comet hitting the deep ocean.

HOW MUCH WATER FROM 'THE WINDOWS OF HEAVEN'?

First we will determine a bare minimum: How much water would it take to drown the then inhabited agricultural land to a depth of 15 cubits? As far as the Midrash is concerned, it was the agriculturalists who "stood up against God". The pastoralists – the shepherds -- were only peripherally involved -- and the hunter-gatherers were not mentioned at all.[704]

The actual area of land used today for farming, pastureland or human settlements is less than half of the Earth's land area. Only ~1/8 is actually used for crops at any given time.[705] Three centuries ago, when the world's population was only ~1/10th of what it is today, there were ~4E6 km^2 of cropland.[706] In Noah's day, before the Mabul, scholars estimate that there were about 20 million people on Earth, less than 1/30th as many people as 300 years ago [707]. Following the pattern of the last 3 centuries, that would mean less than

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[702] The amount of ground water on or in the earth – including fresh water, saltwater, ice and snow, is about 4% of what is found in the oceans. _____ This doesn't incl. H_2O that's chemically or physically bound into rocks. H_2O bound up as hydrous minerals "mostly ...shales" in the Earth's crust & upper mantle is ~9/38ths of all the unbound, regular H_2O in the oceans, etc. A further 7/38ths is bound up in the interstices of rocks as "marine pore water". From: "Water on Earth: its abundance, distribution, and cycling", 9/13/'10, Michael Mottl, (U. of Hawaii). _____ This H_2O wouldn't be available to drown the Earth – unless the Earth was first afflicted by extreme ubiquitous & continuing volcanism. More H_2O is probably in the deeper mantle & core of the earth – with the best guess being that ~2 global oceans of H_2O are in the earth in non- H_2O form. "How Much Water Is There On Earth?..." Robert Krulwich, 6/23/'11_____

[703] **A**. RaMbaN notes that the "*wind blowing all night*" was, in part, to give the skeptics, like Pharaoh, an opportunity to 'not believe'. He also notes a general principle: After showing, at Gen. 6:19, that the Ark was far to small to carry all of the animals & supplies to keep them for a year, he says:
עשו אותה גדולה למעט בנס כי כן הדרך בכל הניסים שבתורה או בנביאים לעשות מה שביד אדם לעשות והשאר יהיה בידי שמים.
"The Ark was made big to reduce what's in the miracle, for this is the way for all miracles in the Torah..., to do what's possible for the hand of Man to do & what's left, to do by the Hands of Heaven." _____ RaLbaG [R. Levi ben Gershon 1288—1344? – S. of France] notes similarly "God always minimizes miracles...He makes use of natural law, bending it only when absolutely necessary" "יותר מעט מהזרות אצל הטבע"[Cited at Ex 14:21 by R. Yaacov Culi, Dayan of Constantinople [1789-1732] in his clasic Me'am Lo'ez] See for, the Mabul התועלת השביעי , on p 170-171 of ביאור הרלב"ג לתורה – בראשית, vol 1, critical text, 1993 [Hebrew]. Though Ralbag is controversial in some Torah circles, possibly for the views he expresses here, a reprinting more than 30 years ago of the Venice, 1547 edition of his commentary on the Chumash [from which I have cited], received the approbation/Haskama of R. Moshe Feinstein. Reb Moshe wrote: "... שמחתי במה שכתר"ה מדפיס את פירוש הרלב"ג על חמשה חומשי תורה " I was pleased to see that the honourable Torah scholar printed the commentary of Ralbag on the five books of Torah."

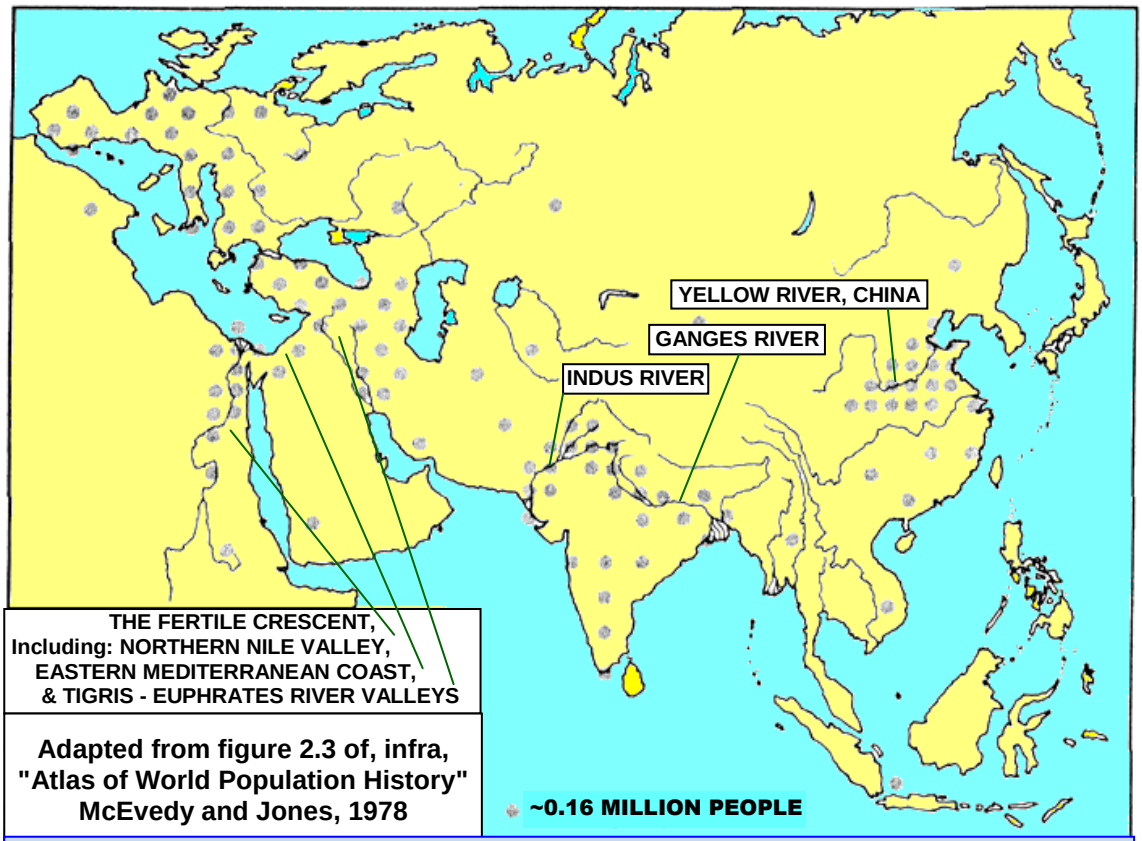
B This comet impact idea was noted by B. J. Peiser: "...scholars hypethesise that environmental disasters caused by commetary punctuations with effects similar to ...the impact of many pieces of comet Shoemaker-Levy on Jupitier, did occur during the Bronze Age producing ...multimegaton catastrophes ..[that] may have effected the climate, civilizations and belief systems on a global scale." p.119, in "Comparative Analysis of Late Holocene Environmental and Social Upheaval: Evidence for a Global Disaster in the Late 3rd Millennium BC [*~time of the Mabul*]"p.117-39, 312 refs._____ Cited by at least 24 in Google Scholar as of 5/5/'15. Pub. in Natural Catastrophes During Bronze Age Civilisations: Archaeological, Geological, Astronomical and Cultural Perspectives. Ed. by Benny J. Peiser, T. Palmer & M. E. Bailey. Archaeopress,'98.____The possibility of a comet hitting Earth 'today' was shown in ' Deep Impact, 2hr,'98, $8E7 budg.,$3.5E8 Box Office gross, SciFi movie.

[704] The Midrash describes how the planters received great returns for very little work and how the descendants of Seth were righteous shepherds until they intermarried with the descendants of Cain – who were planters. Sanhedrin 108a; R. Yochanan :They would sow one year and produce enough to sustain them for 40 years. Midrash Tanchumah Gen 12.; Birds that fattened themselves. BR 28.6.

[705] Global Patterns of Cropland Use Intensity , Stefan Siebert, __ , Felix T. Portmann and Petra Döll , *Remote Sens.* 2010, 2, 1625-43 _____

[706] Estimating Historical Changes In Global Land Cover: Croplands from 1700 to 1992. Navin Ramankutty and Jonathan A. Foley, Global Biochemical Cycles, Vol. 13 #4, p 997-1027, Dec. 1999. _____

[707] "How Many People Have Ever Lived on Earth?", Oct. 2011, by Carl Haub senior visiting scholar at the Population Reference Bureau. _____ This scholar has a estimates that the global population in "8000 BC" was 5 million and that by "1AD" it had increased 60 fold to 300 million. Taking



DISTRIBUTION OF POPULATION IN ASIA AND NORTH AFRICA BEFORE THE MABUL

half a million square kilometers [0.5E6 km^2] under crops.[708] As can be judged from the map above - which includes non-crop based societies as well - most of this was concentrated in the low lying river valleys of the Fertile Crescent, India's Indus and Ganges Rivers and the Yellow River of China.

The Torah appears to distinguish between the way the Mabul affected the planters on the one hand and pastoralists and hunter-gatherers on the other. This is shown in the covering of the mountains: First, at Gen 7:19, we have *"all the high mountains that were under the whole heaven were covered."* Then we read in the next verse *"Fifteen cubits upward did the waters prevail; and the mountains were covered."* "[A]ll the high mountains…" could represent every place on earth that, like the high mountains, is not a regular place for settling and farming. "[T]he mountains…" could represent those lower mountains that are suitable for such life.

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the 8000th root of 60 gives us the avg annual growth rate for these 8k yrs as 0.051192%. Applying that rate to the 5896 yrs from "8000 BC" to the time of the Mabul, gives 20.44E6. Haub is one of the key sources for Historical Estimates of World Population, US Census Bureau, International Programs, ____ citing: McEvedy, Colin and Richard Jones, 1978, "Atlas of World Population History," Facts on File, NY, p. 342-51. The map above has been modified to show an increase in the pop. of the Ganges relative to Indus.

[708] This might at first be assumed to be an overestimate as a larger fraction of the people were living as pastoralists – about 10% -- and hunter gatherers – also about 10% -- compared with three centuries ago. (These are my very rough estimates based on data in McEvedy and Jones, supra. p 208, 271-2. Assumes 1.7E6 hunter-gatherers and pastoralists in sub-Saharan Africa, .8E6 in the Americas, .5E6 in central Asia and at least 1.0 E6 scattered throughout all other parts of Eurasia and Australia. Also assumes about .8E6 in the Americas were farmers. The hunter-gatherers in both Central Asia and the Americas were "horseless". In all cases, fishing is included in the "hunter-gatherer" repertoire.

For the 'high mountains', we might distinguish two areas:

1. High mountains that – like Mount Carmel and Mount Tabor[709] are generally suitable for pastoral life but not for planting, and
2. The highest mountains – like the top of Mount Ararat – that are out of bounds even for the shepherds.

For the first group, fifteen amos of snow will do. We will assume that these areas have 100 times as much land per person as the lower bound of 10 people/km^2 on the main target crop land [710] and that snow is 1/10th the density of water.

The highest mountains might be considered the abode of those who are living as hunter-gatherers – and also where no one lives at all. They would be extremely vulnerable to small changes in their environment. Fifteen amos of snow would not be necessary to make life impossible in these areas. They might be covered with a blanket of thick, dust filled fog – perhaps like the thick darkness of the ninth plague in Mitzrayim[711]. This is consistent with the requirement that, in addition to the rain and the flood, the whole process erased the usual differences between day and night, cold and heat and would have destroyed much of the remaining vegetation.[712] We will assume the water density of this fog is somewhat higher than the saturation level of water in the atmosphere near the ground. This would be about 2% of the density of the air at the same level. We will also assume that it is about 300m deep -- thick enough to cover the tallest trees and the highest irregularities that might protrude from a plain.

The most fertile lands – low lying areas like Mesopotamia – were where most of the people lived who "stood up against God". These areas would receive not only 15 amos of rain, but the runoff from the surrounding mountains and the hot flood from the "fountains of the great deep".

The amount of water from the "windows of heaven" in this "Meteor Mabul" scenario is ~3,500 cubic kilometers [km^3] [713] for the ~80% of the people who lived on the planted agricultural land.[714] It assumes that the usual drainage patterns of the river valleys would have been temporarily obstructed by:

A. Debris piled up by impact and earthquake generated tsunamis,
B. Landslides from multiple minor earthquakes set off by the impacts, &
C. Vast amounts of top soil and fallen, full-leaf timber washed down from the surrounding highlands.

This last effect would be quite dramatic in the Kasrik Gorge area. The already very narrow outlet would be quickly dammed by fallen trees and top soil. The result would be a vast lake that would remain deep enough to float the Ark for the better part of a year.

Another ~14,000 km^3 would be needed to cover the pastoral land with snow. This assumes 10% of the world population were pastoralists and that they occupied 100km^2 for every ten people[715]. The melting snow in this vast area of adjoining pastoral land would tend to maintain or even increase the depth of the water in the valleys even as initial rain and flood water begins to drain out.

To blanket the rest of the earth -- including the seas -- with 300m of fog would require ~3,800 km^3.[716] So the total – before accounting for the Flood from the 'fountains of the great deep' – would be ~21,300 km^3. For

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[709] These, as noted above, p. 153, are called high mountains in comparison with the low mountains from which Mt Sinai was chosen. Mt. Tabor is only 450m. above the surrounding plain; Mt. Carmel is ≤550m above the nearby Mediterranean Sea.

[710] following McEvedy and Jones, supra

[711] וַיְמַשׁ חֹשֶׁךְ '& darkness which may be felt' Shem. 10:21; חֹשֶׁךְ-אֲפֵלָה "thick darkness" Shem. 10-22

[712] "Evidence for an Extraterrestrial Impact 12,900 Years Ago That Contributed to the Megafaunal Extinctions and the Younger Dryas Cooling"; R. B. Firestone, et al. Proc. of the Nat. Acad. of Sci. …U.S.A., V. 104, # 41 (Oct. 9, 2007), pp. 16016-21,: ____

[713] 15 amos ~7m.; .5E6km^2 x 7E-3km = 3.5 E3km^3

[714] 80% is approx. based on McEvedy & Jones, supra

[715] 2E6 pop.×10km^2 ea=20E6km^2 ×(.1×7m H_2O=7E-4km) = 14E3km^3

[716] 5.1E8km^2 = surface of earth;-20.5E6km^2 already covered with new water and snow = 4.9E8km^2 x (1.29E-3gm/cm^3= density of air; 2.6E-5gm/cm^3=density of fog; .3km fog=) 7.8E-6km H_2O = 3.8E3km^3.

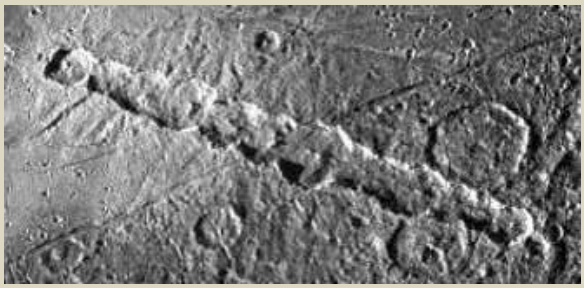
comparison, the total amount of water vapor that the Earth's atmosphere can hold at one time is about 50,000 km^3 [717]. The amount of water actually held in the atmosphere at any one time averages about 12,900km^3 – about 1/4th of the saturation limit[718]. If somehow, all of the water the atmosphere can hold as vapor came out at once, this would produce a layer of water ~ 10cm deep over the whole surface of the planet.

WHAT KIND OF COMET IMPACT WOULD BE NEEDED?[719-A]

Since the Torah refers to *'all the fountains of the great deep'* breaking open [Gen 7:11][719-B], we'll assume the comet falls into the deep sea. This is very important. A comet in the size range we are looking at here falling into the deep sea will produce much more water vapor and much less dust than one hitting land or shallow water.

We'll also assume that the energy of the comet is used to turn the water of the ocean into steam – not primarily into microscopic droplets.[720] Water in the deep ocean is ~0°C. Turning a gram of such water to steam, neglecting issues of salinity and pressure for the time being, would take ~100 calories to raise it to the boiling point (100° C) and ~540 more cal. to vaporize it. So, ~640 cal., or ~2700 joules/gm would be needed. To convert 21.3E3 km^3 or 2.13E19 gms of water into steam, our comet would need ≥5.8E22 j. in kinetic energy before it hits the ocean. In addition to making rain, the comet will have to make gigantic tidal waves – for the flood from the ***'fountains of the great deep'***.

Since our Mesorah refers to the Pleiades rising in the opposite part of the sky just prior to the Mabul, and we have the recent experience of comet Shoemaker - Levy 9 (SL-9)



CRATER CHAIN ON GANYMEDE, A MOON OF PLANET JUPITER. IT WAS MADE BY THE IMPACT OF A COMET OR ASTEROID THAT BROKE UP – LIKE THE COMET SL-9 – SOME TIME BEFORE IMPACT. THIS CHAIN IS ~80 MILES LONG & MIGHT'VE BEEN FORMED IN A FEW HRS – COMPARED TO THE 6 DAYS OF SL-9. MANY SUCH CRATER CHAINS HAVE BEEN FOUND.

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[717] This assumes an avg. saturation of 1% by weight with an average atmospheric pressure of ~1kg/cm^2 at sea level and an average temperature of 13°C.

The atmosphere can also hold water in the form of droplets and tiny ice crystals -- as we have in the form of clouds and fogs. In the case of very small ice crystals, they can remain suspended in the atmosphere for days or weeks.

For particles where r< ~100µm, gravity settling rate= 0.01 x r^2(cm/sec), where r is the particle radius in µm & 1 g/cm^3 i.e. difference between particle & fluid density. For particles r< ~1µm, gravitation settling may be neglected. Small particles may be incorporated into larger particles by collision & coagulation; incorporated into raindrops, hailstones, etc.; and/or be removed via impaction or diffusive transport. [formulae from slide 8 of Kyra Naumoff Shields, PhD (kshields@pitt.edu) March 28, 2011, Based on text from: Chemical Fate and Transport in the Environment.

Water vapor or microdroplets generated by the comet impacts can be ejected to the upper atmosphere & remain as microcrystals of ice. This could amount to more than the saturation level of water vapor in the atmos. & produce rain for months after the impacts.

[718] For ref. on ground water, supra, see footnote 702.

[719-A] The source of long period & Halley-type comets -- the type we'll be discussing here -- is the Oort Cloud [after J. H. Oort who proposed it in 1950CE]. It's a Sun centered, spherical cloud filling space in the region 0.3-0.8 light yrs from the Sun. It's believed to contain 10^{12} objects ≥1 km, with ≥10^9 objects ≥20km in diam. -- made mostly of ices, such as water, ammonia & methane. The nucleus of Comet Halley, believed to be from the Oort cloud from its tilted & retrograde motion, is ~16x8x8km. 80,10 & 2.5% of its ejecta was H_2O, CO & CO_2, respectively.

[719-B] This expression traditionally also includes hot springs – which would've been activated by the impact. The word 'all' would appear to require both hot springs & the deep seas. The latter are referred to with the same word -- תְּהוֹם -deep – in Gen. 1:2

[720] Another way to deliver water from the region of comet impact to the agricultural land is a series of "hypercanes" –mega hurricanes--extreme weather systems brought on when a region of thousands of km^2 of ocean surface is heated to ≥50°C – something that might result from a comet impact. [Emanuel, K.A.et al, 1995: Hypercanes: …J. Geophys. Res., 100, 13755-65.] This would take much less energy/kg. of water delivered but we have no tradition of 500mph "hypercane" winds – at the time of the Mabul – at least not around Noah. Still, this could've been how water from a deep Pacific impact came to China.

breaking into 21 fragments before hitting Jupiter over a period of 6 days[721], we'll assume that, instead of a single large impact, we have 8 smaller ones with the same combined kinetic energy.

A typical comet 8km in diameter[722] would have a pre-impact kinetic energy of 24.3E22 joules[723] – about four times the energy necessary to produce the 'rain' in our scenario[724]. If broken into the equivalent of eight equal pieces of 4.0km diameter each, for our Pleiades version, it would vaporize a total of 40E3km[725] of water. This is nearly twice what's called for in our scenario. At 2K km from their impact sites, each of our 8 hypothetical comet fragments would produce a tsunami wave 41-83m high[726]. For places only 200 km distant, the tsunami would be 10× higher.[727] This could account for the flood from *'all of the fountains of the great deep'* – again, in the "Meteor Mabul" scenario.

It would also produce a total of 3 km^3 of melted or vaporized rock and sand. According to the program, about half of this, 1.5 km^3, will remain in the crater. This is comparable to the eruption of Mt. St. Helena – a level of volcanic activity that occurs 10 to 20 times per century. Unlike such eruptions, our comet impact would produce relatively little sulfurous gas or other poisonous emissions. A comet of the same character hitting land would produce ~500× as much melted or vaporized rock and little water vapor.

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721 Two simulations of this comet showed an average density of ~0.5gm /ml. "Density of comet Shoemaker–Levy 9 deduced by modeling breakup of the parent 'rubble pile'", E. Asphaug & W. Benz, *Nature* 370, 120 –24, 14 July, 1994; _____"Density and size of comet Shoemaker–Levy 9 deduced from a tidal breakup model", Johndale C. Solem, *Nature* 370, 349 - 51 ,04 Aug. '94. _____ Four other comets, weighted by mass, show an avg. density of .59gm/ml; unweighted, the avg. density =0.53/gm./ml. Wikip., 1/15/12.

722 NASA says the avg. comet nucleus is <10 km across. A small comet is about the size of a house._____

723 For comparison, the Sun's energy reaches Earth at ~1,400 joules/sec/m^2 or 1.8E17j/sec. reaching the whole Earth from the Sun. 24.3E22 j. would take 1.35E6sec.=3,750hrs,~5months.The 1.6E11 tons of this comet,[4E3km^3×4/3π×[0.6gm/cm^3]=~3E6y worth of an estim. 5-6E4tons of extra-terrestr'l matter entering Earth's atmosphere/y:"A direct measurement of the terrestrial mass accretion rate" S.G. Love & D.E. Brownlee, *Science;*10/22/'93; [However, techniques in this study are geared to detect rock & metal – not sublimable frozen gasses of Oort Cloud comets.]

724 According to the online program: "Earth Impact Effects Program, 2004" ____ as explained in "Earth Impact Effects Program: A Web-based computer program for calculating the regional environmental consequences of a meteoroid impact on Earth". *Meteoritics & Planetary Science* 40, Nr 6, 817–840 ('05), both by Robert Marcus, H. Jay Melosh, & Gareth Collins _____ We'll assume 55km/sec – slightly higher than what the program shows as avg. (51km/sec). [Long period comets have somewhat higher avg. speed]; typical comet density (0.6 gram/ml); hitting the ocean at a depth of 4.0km; & at the most likely angle, (45°). (The avg. ocean depth is 4.3 km (NOAA,_____), avg. for the Arabian sea – nearest to Mesopotamia- is only 2.7 km, max: 4.65km; for the Mediterranean Sea– nearest to the Nile Delta -- the avg. is more shallow, but there are deep areas; for the Yellow River, the nearest 2km depths are 1,600km away in Okinawa Trough. 7km depths are 1,700km distant in Ryukyu Trench. The nearby East China Sea averages only ~50 m.

725 A detailed analysis of the impact of a comet in the deep sea is at "Tsunamis from asteroid impacts in deep water" Galen R. Gisler, 2007 _____ Here we find that, for deep water impacts (~5Km) the amount of water vaporized is a linear function of the kinetic energy of the impactor , while the amount of water displaced by the "hole in the ocean" varies as the 3/4 power . For the highest energy object studied in this simulation, a 1 km diam. iron asteroid of 20m/sec, ~ 8.5% of the volume of the displaced water was vaporized. For each of our eight 4km diam., 0.6gm/cm^3, 55m/sec comet fragments, the energy would increase by a factor of 38. So, *ceterus paribus*, the volume displaced would increase by a factor of $38^{0.75}$ =15.3. The % of the displaced water that is vaporized would increase to 38/15.3 x 8.5 =21.1%. As the mass of water displaced in the simulation is shown as~ 2E18 gms (est. from fig 2), with ~ 1.7E17gms vaporized (est. from fig 3), we'd expect 38X this to be vaporized for ea. of our 8 comet fragments or 64.6E17 gms or 6,460km^3. However, with the depth of water in our scenario ~4km instead of the 5km in the published simulations, we'll reduce the amount of water vaporized, by ~ 1/5th to ~5,000km^3/ fragment or 40,000km^3 for all eight combined.

A good part of this water would be lofted into & above the stratosphere where it wouldn't be available to fall as rain in the initial 40 days of the Mabul. At least partly offsetting this, additional water will be sent into the lower – rain making -- atmosphere as a result of the splash of liquid water falling back into the sea and the intense heating of the sea surface far beyond the "hole in the water" generated by the initial impact blast.

See also: "Melt Production in Oblique Impacts", E. Pierazzo and H. J. Melosh. Icarus, Vol. 145, Issue 1, May 2000, P. 252-61, Comet/Asteroid Impacts and Human Society: An Interdisciplinary Approach. Peter T. Bobrowsky & Hans Rickman, Edit, 549 p, 2007, _____

726 These heights refer to a wave in the deep ocean above mean ocean level. Ht of the water on the land depends on the geometry of the land & ocean bottom between the impact site & the point of measurement. The momentum of a wave can cause it to "run up" on the land to a level several times higher than the wave. Madagascar & Mauritius, which, as noted [p 160], had unique birds – elephant bird & dodo, respectively, that may've survived the flood, were ~4K km from a hypothetical Arabian Sea impact. The tsunami wave would be only 20-40m and both islands have significant habitable area hundreds of meters above sea level.

For graphics of tsunami heights by time and distance for a deep sea impact comparable in energy to each of our 8 comet fragments, see: Impact tsunami–Eltanin, Steven N.Ward, Erik Asphaug, Deep-Sea Research II 49 (2002) 1073–1079. It includes such run-up effects . This is based on the Eltanin asteroid impact, 1,300 km W of the tip of S. America. It involved a stony asteroid of 1- 4km diam. impacting an area of the ocean that was ~ 5km deep. For more on this, see:_ "Geological record and reconstruction of the late Pliocene impact of the Eltanin asteroid in the Southern Ocean" R. Gersonde, et al., Nature, 1997, p 357-63_____

727 At these nearer points, there'd also be winds near the speed of sound – enough to knock down nearly all trees. As we've no mesorah of such an event immediately preceding the rain – or in the whole time of the Mabul -- we may assume that any impacts were much farther away than this from Noah. Such winds would have severely damaged the Ark & knocked it over even before it had a chance to float.

This amount of ejecta -- about 750km^3 -- would be approaching the level of a super volcano – with devastating and long standing environmental consequences. [728]

The very high proportion of water vapor to rock ejecta in our deep sea scenario -- over 20,000:1 -- would have several important effects:

1. **It would allow the air to remain breathable. We have no mesorah that Noah had difficulty breathing on the Ark – or that there were any miracles required to purify the air.**
2. **It would tend to produce very few forest fires ignited by falling ejecta & it would tend to extinguish such fires shortly after they started.**
3. **It would allow more sun to pass through – reducing the global cooling that would come from partly blocking out the sun.**
4. **It would tend to remove most the dust from the atmosphere before it had a chance to settle on the polar ice caps, and** [729]
5. **It would wash away much of the evidence of the Mabul** [730]**.**

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[728] This assumes that the target at the bottom of the sea is ordinary crystalline igneous rock – which is generally low in sulfur.

[729] The prog. shows for places only 3E3km from impact –½ the dist. to major polar ice sheets if impacts occurred closer to populated areas like Mesopotamia--*"Almost no solid ejecta reaches this site."* For 2E3km dist., prog. shows for each of our 8 comet fragments:~*"Avg Ejecta Thickness: 3.71μ; Mean Fragment Diam: 22.4μ"* However, such dust would have a long settling time & would likely be washed out by precipitation before it had the chance to travel so far.

[730] Since comets aren't pure ice, if the one that hit had substantial impurities, it would've produced more ejecta – though the total would be a small part of the comet's size & half would remain on the ocean floor.

However, the program doesn't show what happens to biota, other biomass & dissolved solids -- incl. both common salts & heavy metals – that are in the vaporized ocean water. Such material makes up ~3.5% of the ocean water by wt. So for the 40E3 km^3 of ocean water in our scenario, there'd be 1.4E12 metric tons-- and ~600 km^3 for the mix of materials found in sea water. This is 400X the 1.5km^3 of rock ejected by the impacts on the ocean floor—suggesting some discernable & identifiable residue may have landed on the Greenland icecap., Also, as shown in ref. **D** below, some of these materials – such as Cl & Br -- would interact chemically with the atmosphere to produce damaging effects. Also, the mix of oxygen isotopes ^{18}O & ^{2}H in the water from the full depth profile of the deep sea is sufficiently different from the profile in the water of ordinary snow on extreme polar icecaps that it could be a signature of a deep sea impact. Other isotopes in the comet itself, e.g. ^{2}H, suggested in **E-1** & other light cosmogenic isotopes suggested in **E-2** may serve as markers of a comet impact. Ref. **H** concerns the use of the pattern of annual and sub-annual sedimention in Lake Van for the study of climate change. Lake Van is a very large, deep lake with no outlet – other than evaporation –& good records extend over 14k years. It is also only ~140-150km from the deepest section of the lake to Kumcati Vil. Ref. **F** is a good source on the Tunguska event – a comet/asteroid like impact with the atmosphere in a remote part of Siberia in 1908. Ref. **F.** estimated the event to have been the equivalent of a bomb of several megatons & to have a frequency of occurrence on earth of 1/century or so. This study also suggests how such an impact could reduce the difference between day & night by ejecting – through the hole in the atmosphere produced by the impactor -- ultrafine particles into orbit >200km above land. Ref **G** finds tropical marine microfossils in Greenland ice cores – suggesting a small comet impact just 1.5k yrs ago.

.A "Interpretation of the observations made in 1883 in Zacatecas (Mexico): A fragmented Comet that nearly hits the Earth", 12,Oct 2011, Hector Javier Durand Manterola, Maria de la Paz Ramos Lara & Guadalupe Cordero [Departamento de Ciencias Espaciales, Instituto de Geofísica & Centro de Investigaciones Interdisciplinarias en Ciencias y Humanidades, Universidad Nacional Autónoma de México (UNAM). ___ ___ ___

.B "Large Pt anomaly in the Greenland ice core points to a cataclysm at the onset of Younger Dryas" Michail I. Petaeva, Shichun Huanga, Stein B. Jacobsena, & Alan Zindlera, vol. 110 no. 32, Proceeding of the National Academy of Science of the US , 6/26/'13 ___. **.C** "Nanodiamond-Rich Layer across Three Continents Consistent with Major Cosmic Impact at 12,800 Cal BP", Charles R. Kinzie, et al, The Journal of Geology , V. 122, # 5, 9/2014 ____ _____ **.D** "Ozone Perturbation From Medium-Size Asteroid Impacts In The Ocean" *E. Pierazzoa, R.R. Garcia, D.E. Kinnison, D.R. Marsh, J. Lee-Taylor, P.J. Crutzen. Earth and Planetary Science Letters*, 299, 263-272, 2010 _ _ _ _.**E-1.a** [deuterium on Oort comets [based on measurements for 8 Oort comets] is 2× avg. in ocean H_2O & 2.5-3×the Northern Greenland & Antarctic icecaps, resp.: pdf 13: "Deuterium Fractionation: the Ariadne's Thread from the Pre-collapse Phase to Meteorites and Comets today" Cecilia Ceccarelli et al, 2014, in *Protostars & Planets VI* (pp. 859-882). _____ _____ **.E-1.b** Earth based data from p. 49: Isotopes of the Earth's Hydrosphere, p. V.I. Ferronsky, V.A. Polyakov, 2012. This book also states, p 59, **.E-1.c** that ocean water is homogeneous below 500m in terms of isotopic compostion, citing: I. Friedman, et al.1964, "The variation of the deuterium content of natural waters in the hydrologic cycle" Rev. of Geophys. and Space Phys, V. 2, pp.177-224"] **.E-2.a** "Cosmogenic nuclide enhancement via deposition from long-period comets as a test of the Younger Dryas impact hypothesis". A. C. Overholt, A. L. Melott, Earth and Planetary Sci. Letters, 9/2013 _____ _ _ [doesn't cite source on commetary atomic abundances—noted in "§ 2 Comet Composition", par. 2 —could be?: **.E-2.b** "Aspects of the major element composition of Halley's dust." Jessberger E. K., Christoforidis A. & Kissel J. ('88) Nature 332,691-95.- source of "Average atomic abundances of elements in Halley dust grains" [incl. both dust and ice] shown in table 1, p 1203, of "Expected characteristics of cometary meteorites", Humberto Campins & Timothy D. Swindle, *Meteoritics & Planetary Science 33,* 1201-11 ('98) **.F** "The Tunguska Event", Giuseppe Longo, ch 18 p 302-330 in Comet/Asteroid Impacts and Human Society: An Interdisciplinary Approach, Bobrowsky & Rickman,eds. '07, _____ _ ; **.G** "What caused terrestrial dust loading and climate downturns between A.D. 533 and 540" *Dallas H. Abbott et al ?* Geolog. Soc. of Am., Special Pap. 505, '14 _____ "Geological Implications of Impacts of Large Asteroids and Comets on the Earth". 1982 Geolog. Soc. of Am.

.H "Dating Late Glacial abrupt climate changes in the 14,570y long continuous varve record of Lake Van, Turk."G.Landmann;A.Reimer;G. Lemcke;S.Kempe,Palaeogeogr.Palaeoclimatol.Palaeoecol.'96,122,107–18. It is cited 162 times on Google Scholar thru Aug 10/'01.

Refs **B** & **C** come to explain the " abrupt cooling episode known as the Younger Dryas (YD) [as the result of]… a cosmic impact or airburst at the YD boundary (YDB) [starting ~12.8k yrs. ago [conventional scientific date] & lasting ~1k yrs.] that triggered cooling and resulted in other calamities, including the disappearance of the Clovis culture and the extinction of many large mammal species [e.g. mammoth, sabertooth cats, camels & horses in N. America] ." From the abstact of ref. **B.** ____

CONSISTENT WITH OUR MESORAH

This scenario is consistent with our Torah and Mesorah. The Torah says: [GEN. 7:11]

...בַּיּוֹם הַזֶּה נִבְקְעוּ כָּל-מַעְיְנֹת תְּהוֹם רַבָּה וַאֲרֻבֹּת הַשָּׁמַיִם נִפְתָּחוּ.

...on the same day were all the fountains of the great deep broken up and the windows of Heaven were opened.

It's an event that begins abruptly and spectacularly on a particular day – though warnings are there in the Heavens. The Gemorah, Yuma 76a, resolves the dispute between R. Judah and R. Nechemya, cited above, by saying that the flood preceded the rain. In this scenario, the the flood from the sea and hot water from volcanism/geysers set off by the impact -- would both precede most of the rain. The impact of such a large comet with the Earth – even in the deep sea – would be expected to produce a fireball of incandescent vaporized ejecta. If far enough away, it would be seen as the opening of "*the windows of heaven*" – before both the flood and the rain.

The approach of the comet -- if it had fragmented -- might first look like the Pleiades rising in the opposite side of the sky; then, as it neared the earth, as the Sun rising in the place where it should've been going down. In the last hours before it struck the earth, it would've been brighter than '*seven suns' [Midrash Rabbah, Gen. 3:6]*

Consistent with our Mesorah[731], the flood waters might have been hot - even boiling in some places -- both as a direct result of the impact and the secondary effects of hot springs opening up, increased volcanic activity, and incandescent ejecta falling from the sky. The same ejecta – in the form of very fine ice crystals in the upper atmosphere -- would've brightened the nights and darkened the days. Excessive rain might've continued to fall long after the comet hit. This might've been from some combination of those same ultrafine ice crystals and a series of hypercanes. The natural cycles of time *'...seed-time & harvest, cold & heat, summer & winter, day & night...'* [GEN 8:22]– would've ceased for a good part of a year.

צ"ע [732]

כְּסִיל[**Orion**], lower left & מזל כימה [Pleiades, green arrow], upper R, as seen in night sky. Bright star, **Aldebaran**, [blue arrow] is ~midway between them. Insert, lower R: enlarged image: מזל כימה ~seen with unaided eye. Yellow arrow points to ζ **[Zeta] Orionis** - see footnote 153, thick, orange arrow to **Betelgeuse;** short arrow: **Sirius**, left extension. See also star chart in "Count the Stars..."

at summer camp. I realized that I wasn't sure if The Pleiades were the cluster near Aldebaran – which was close to the 7-8 belt lengths from Orion that I'd previously measured on the star chart [see p. 19] -- or the more Pleiades-like group ~11-12 belt lengths away, measured 'in the air'. The fig. above shows the latter is correct. It also shows the similarity of מזל כימה to the actual appearance of a broken comet- shown above right—tho' this particular comet was too distant to be seen by the unaided eye.

SCHWASSMANN-WACHMANN 3 COMET: FRAGMENT B PHOTO BY HUBBLE SPACE TELESCOPE 4/20/'06, DURING ITS PASSING. IT CAME ≤E6 MILES FROM THE EARTH, ON 5/13/'06

C. Star chart on p. 19 maps hyper-hemispherical night sky onto a flat ellipse making it appear that The Pleiadies are only 7-8 belt lengths from Orion. This reminds us of how our mapping of the world onto the surface of our available experiences, introduces distortions that may only become apparent when we check our "maps" against reality.

D. CHELYABINSK METEOR was a superbolide caused by an ~19 m. diam near-earth asteroid over russia ON 15/2/'13 ~ (03:20 UTC), AT ~19.16 KM/S (65K KM/H) ..became a brilliant meteor over the Southern Ural Region. IT WAS BRIGHTER THAN THE SUN Because of its high speed & shallow angle of atmospheric entry, it exploded at ht ~ 29.7 km. generating a bright flash...as well as a large shock wave. Most of its energy was absorbed by the atmosphere, with a total kinetic energy before atmospheric impact estim. to be like .5Mton TNT ~30X 16kT Hiroshima A bomb, where 1 kton TNT= 4.185E12j [m tonnes] "A 500-kiloton airburst over Chelyabinsk and an enhanced hazard from small impactors"P.G.Brown, et al, Nature, V.503,11/14/'13, 2/5/'17

E. THE TUNGUSKA EVENT "According to the Ir flux in the explosion area...[energy >10Mt TNT]. & if it was] a comet, the total mass was >7E9kg & >160m diam. Discovery of iridium and other element anomalies near the 1908 Tunguska explosion site, Hou, Q. L., et al, Planetary and Space Science, V. 46, # 2, p. 179-88.

F. "Estimated cumulative frequency distribution of kinetic energy of bodies colliding with the Earth" Shows Tunguska size event 1/~300 yrs; Hirosh. size- 1/yr; 50Mt [largest H bomb~58 Mt] 1/1kyrs;p.476, Ann. Rev. Earth Planet. Sci. 1983. 11:461-94, Asteroid And Comet Bombardment Of The Earth! Eugene M. Shoemaker, US Geol. Surv.

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[731] Sanh. 108b:Gen 8:1: וַיְשַׁכּוּ הַמַּיִם ... '...and the waters cooled.' "With hot passion they sinned, and by hot water they were punished."

[732] **A.** Abbrev. for Hebrew: צריך עיון meaning: "needs more study".

B. The 2 figs. above were added after the levaya of R. Yisroel Belsky, Z'TsL, [8/22/'38 – 1/28/'16 [R. Yoseph Adler was nifter 20/Av, 8/17/'38] 22 Shevat, 5776 [Sun. night-early Mon. AM, 1/31-2/1/'16]. When we reached the Har Menuchas Cemetery in Jerus, it was ~midnight – with a very clear sky. כְּסִיל [Orion] & מזל כימה [The Pleiades] were clearly visible. R. Belsky was well known for, among other things, explaining the stars to students

אומרים שבעים

FROM THE MOUNTAINS OF ARARAT TO THE TOP OF PISGAH

PART 5

THE WAYS OF TSADIKIM

Still, some may find this "Meteor Mabul" objectionable. They might be either too accustomed to the image of a Mabul several miles deep drowning the peaks of the high mountains or they might find this scenario too mechanistic. For the first group, I hope that a more careful reading of what I have already written will reduce their objections. For the second group, there is still some need for clarification.

I have suggested – in keeping with the Torah and Midrashim -- that the primary target of the Mabul was the agriculturists – the planters -- who "stood up against God". I also showed that the land of agriculturists amounted to about half a million km^2. It's this land that might've received the full brunt of the 15 amos of Ark-floating water. This is only 0.1%of the surface of the planet. The Flood from the sea would hit a much broader area -- but for this Meteor Mabul to work in all its details, the rain would have to be guided to those places on earth where 'standing up against God' was truly prevalent. It is very unlikely that this would happen by chance. The key is to see the combination of location and timing as the expression of the miraculous. This is what we see in at least five of the Ten Plagues and in the miracles of the quail in the Sinai. [733] It's also

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[733] **PLAGUE OF FROGS Exod 8:5-6,9 :**

ה וַיֹּאמֶר מֹשֶׁה לְפַרְעֹה, הִתְפָּאֵר עָלַי, לְמָתַי אַעְתִּיר לְךָ וְלַעֲבָדֶיךָ וּלְעַמְּךָ, לְהַכְרִית הַצְפַרְדְּעִים מִמְּךָ וּמִבָּתֶּיךָ: רַק בַּיְאֹר, תִּשָּׁאַרְנָה. ו וַיֹּאמֶר, לְמָחָר; וַיֹּאמֶר, כִּדְבָרְךָ--לְמַעַן תֵּדַע, כִּי-אֵין כַּיהוָה אֱלֹהֵינוּ. ז וְסָרוּ הַצְפַרְדְּעִים, מִמְּךָ וּמִבָּתֶּיךָ, וּמֵעֲבָדֶיךָ, וּמֵעַמֶּךָ: רַק בַּיְאֹר, תִּשָּׁאַרְנָה. ט וַיַּעַשׂ יְהוָה, כִּדְבַר מֹשֶׁה; וַיָּמֻתוּ, הַצְפַרְדְּעִים, מִן-הַבָּתִּים מִן-הַחֲצֵרֹת, וּמִן-הַשָּׂדֹת.

[5] And Moses said unto Pharaoh: 'Have thou this glory over me; against what time shall I entreat for thee, …, that the frogs be destroyed from thee and thy houses, and remain in the river only?'[6] And he said: 'Against to-morrow.' And he said: 'Be it according to thy word;... …[9] And the LORD did according to the word of Moses; and the frogs died…

CATTLE PLAGUE Ex 9:5-7 :

ה וַיָּשֶׂם יְהוָה, מוֹעֵד לֵאמֹר: מָחָר, יַעֲשֶׂה יְהוָה הַדָּבָר הַזֶּה--בָּאָרֶץ. ו וַיַּעַשׂ יְהוָה אֶת-הַדָּבָר הַזֶּה, מִמָּחֳרָת, וַיָּמָת, כֹּל מִקְנֵה מִצְרָיִם; וּמִמִּקְנֵה בְנֵי-יִשְׂרָאֵל, לֹא-מֵת אֶחָד. ז וַיִּשְׁלַח פַּרְעֹה--וְהִנֵּה לֹא-מֵת מִמִּקְנֵה יִשְׂרָאֵל, עַד-אֶחָד; וַיִּכְבַּד לֵב פַּרְעֹה, וְלֹא שִׁלַּח אֶת-הָעָם.

[5] And the LORD appointed a set time, saying: 'Tomorrow the LORD shall do this thing in the land.' [6] And the LORD did that thing on the morrow, and all the cattle of Egypt died; but of the cattle of the children of Israel died not one.

INTENSE HAIL –Ex 9:18, 9:28-9, 9:33 :

יח הִנְנִי מַמְטִיר כָּעֵת מָחָר, בָּרָד כָּבֵד מְאֹד, אֲשֶׁר לֹא-הָיָה כָמֹהוּ בְּמִצְרַיִם, לְמִן-הַיּוֹם הִוָּסְדָה וְעַד-עָתָּה. ...
כח הַעְתִּירוּ, אֶל-יְהוָה, וְרַב, מִהְיֹת קֹלֹת אֱלֹהִים וּבָרָד; וַאֲשַׁלְּחָה אֶתְכֶם, וְלֹא תֹסִפוּן לַעֲמֹד. כט וַיֹּאמֶר אֵלָיו, מֹשֶׁה, כְּצֵאתִי אֶת-הָעִיר, אֶפְרֹשׂ אֶת-כַּפַּי אֶל-יְהוָה; הַקֹּלוֹת יֶחְדָּלוּן, וְהַבָּרָד לֹא יִהְיֶה-עוֹד, לְמַעַן תֵּדַע, כִּי לַיהוָה הָאָרֶץ. ... לג וַיֵּצֵא מֹשֶׁה מֵעִם פַּרְעֹה, אֶת-הָעִיר, וַיִּפְרֹשׂ כַּפָּיו, אֶל-יְהוָה; וַיֶּחְדְּלוּ הַקֹּלוֹת וְהַבָּרָד, וּמָטָר לֹא-נִתַּךְ אָרְצָה.

[18] Behold, tomorrow about this time I will cause it to rain a very grievous hail, **…28** Entreat the LORD, and let there be enough of these mighty thunderings and hail;….' [33] And Moses …spread forth his hands unto the LORD; and the thunders and hail ceased, …

PLAGUE OF LOCUSTS: Exod 10:4,13,15,18,19 :

ד כִּי אִם-מָאֵן אַתָּה, לְשַׁלֵּחַ אֶת-עַמִּי--הִנְנִי מֵבִיא מָחָר אַרְבֶּה, בִּגְבֻלֶךָ. ה וְכִסָּה אֶת-עֵין הָאָרֶץ, וְלֹא יוּכַל לִרְאֹת אֶת-הָאָרֶץ...

seen, as already mentioned, in the parting of the Yam Suf by the wind blowing all night [Exod 14:21].

So too, it is important to see that the Mabul – like the Ten Plagues, the quail and the parting of the Yam Suf – had an apparent natural basis. That natural basis gave observers in each case a choice of how to see it. There were

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[יג] וַיֵּט מֹשֶׁה אֶת-מַטֵּהוּ, עַל-אֶרֶץ מִצְרַיִם, וַיהוָה נִהַג רוּחַ-קָדִים בָּאָרֶץ, כָּל-הַיּוֹם הַהוּא וְכָל-הַלָּיְלָה; הַבֹּקֶר הָיָה--וְרוּחַ הַקָּדִים, נָשָׂא אֶת-הָאַרְבֶּה. .... [טו] וַיְכַס אֶת-עֵין כָּל-הָאָרֶץ, וַתֶּחְשַׁךְ הָאָרֶץ,... [יח] וַיֵּצֵא, מֵעִם פַּרְעֹה; וַיֶּעְתַּר, אֶל-יְהוָה. [יט] וַיַּהֲפֹךְ יְהוָה רוּחַ-יָם, חָזָק מְאֹד, וַיִּשָּׂא אֶת-הָאַרְבֶּה, וַיִּתְקָעֵהוּ יָמָּה סוּף: לֹא נִשְׁאַר אַרְבֶּה אֶחָד, בְּכֹל גְּבוּל מִצְרָיִם.

[4]…tomorrow will I bring locusts into thy border;[5] and they shall cover the face of the earth, that one shall not be able to see the earth;…[13] And Moses stretched forth his rod over the land of Egypt, and the LORD brought an east wind upon the land all that day, and all the night; and when it was morning, the east wind brought the locusts. …[15] And they covered the face of the whole earth, so that the land was darkened;…[18] And he …entreated the LORD. [19] And the LORD turned an exceeding strong west wind, which took up the locusts, and drove them into the Red Sea; there remained not one locust in all the border of Egypt.

THICK DARKNESS Ex 10:22-3 :

[כב] וַיֵּט מֹשֶׁה אֶת-יָדוֹ, עַל-הַשָּׁמָיִם; וַיְהִי חֹשֶׁךְ-אֲפֵלָה בְּכָל-אֶרֶץ מִצְרַיִם, שְׁלֹשֶׁת יָמִים. [כג] לֹא-רָאוּ אִישׁ אֶת-אָחִיו, וְלֹא-קָמוּ אִישׁ מִתַּחְתָּיו--שְׁלֹשֶׁת יָמִים; וּלְכָל-בְּנֵי יִשְׂרָאֵל הָיָה אוֹר, בְּמוֹשְׁבֹתָם.

[22] And Moses stretched forth his hand toward heaven; and there was a thick darkness in all the land of Egypt three days; [23] …but all the children of Israel had light in their dwellings.

THE MIRACLES OF THE QUAIL IN THE SINAI

[ח] וַיֹּאמֶר מֹשֶׁה, בְּתֵת יְהוָה לָכֶם בָּעֶרֶב בָּשָׂר לֶאֱכֹל וְלֶחֶם בַּבֹּקֶר לִשְׂבְּעַ, בִּשְׁמֹעַ יְהוָה אֶת-תְּלֻנֹּתֵיכֶם, אֲשֶׁר-אַתֶּם מַלִּינִם עָלָיו; וְנַחְנוּ מָה, לֹא-עָלֵינוּ תְלֻנֹּתֵיכֶם כִּי עַל-יְהוָה.
[יב] שָׁמַעְתִּי, אֶת-תְּלוּנֹּת בְּנֵי יִשְׂרָאֵל--דַּבֵּר אֲלֵהֶם לֵאמֹר בֵּין הָעַרְבַּיִם תֹּאכְלוּ בָשָׂר, וּבַבֹּקֶר תִּשְׂבְּעוּ-לָחֶם; וִידַעְתֶּם, כִּי אֲנִי יְהוָה...
אֱלֹהֵיכֶם. [יג] וַיְהִי בָעֶרֶב--וַתַּעַל הַשְּׂלָו, וַתְּכַס אֶת-הַמַּחֲנֶה; וּבַבֹּקֶר, הָיְתָה שִׁכְבַת הַטַּל, סָבִיב, לַמַּחֲנֶה.

[12] 'I have heard the murmurings of the children of Israel. Speak unto them, saying: At dusk ye shall eat flesh… and ye shall know that I am the LORD your God.' [13] And it came to pass at even, that the quails came up, and covered the camp; …**Ex. 16:8,12,13**

[יח] וְאֶל-הָעָם תֹּאמַר הִתְקַדְּשׁוּ לְמָחָר, וַאֲכַלְתֶּם בָּשָׂר--כִּי בְכִיתֶם בְּאָזְנֵי יְהוָה לֵאמֹר מִי יַאֲכִלֵנוּ בָשָׂר, כִּי-טוֹב לָנוּ בְּמִצְרָיִם; וְנָתַן יְהוָה לָכֶם בָּשָׂר, וַאֲכַלְתֶּם. [יט] לֹא יוֹם אֶחָד תֹּאכְלוּן, וְלֹא יוֹמָיִם; וְלֹא חֲמִשָּׁה יָמִים, וְלֹא עֲשָׂרָה יָמִים, וְלֹא, עֶשְׂרִים יוֹם. [כ] עַד חֹדֶשׁ יָמִים, עַד אֲשֶׁר-יֵצֵא מֵאַפְּכֶם, וְהָיָה לָכֶם, לְזָרָא: יַעַן, כִּי-מְאַסְתֶּם אֶת-יְהוָה אֲשֶׁר בְּקִרְבְּכֶם, וַתִּבְכּוּ לְפָנָיו לֵאמֹר, לָמָּה זֶּה יָצָאנוּ מִמִּצְרָיִם.
[לא] וְרוּחַ נָסַע מֵאֵת יְהוָה, וַיָּגָז שַׂלְוִים מִן-הַיָּם, וַיִּטֹּשׁ עַל-הַמַּחֲנֶה כְּדֶרֶךְ יוֹם כֹּה וּכְדֶרֶךְ יוֹם כֹּה, סְבִיבוֹת הַמַּחֲנֶה--וּכְאַמָּתַיִם, עַל-פְּנֵי הָאָרֶץ.

[18] And say thou unto the people: Sanctify yourselves against to-morrow, and ye shall eat flesh; …[19] Ye shall …eat [flesh]… [20] …a whole month**…** [31] And there went forth a wind from the LORD, and brought across quails from the sea, and let them fall by the camp, about a day's journey on this side, and a day's journey on the other side, round about the camp, and about two cubits above the face of the earth. **Num. 11:18,19, 20, 31**

those in all of these situations who saw the events as natural phenomena – having nothing to do with their personal behavior or questions of kindness and truth.

In contrast to this is the way the Tsadikim perceive the 'ordinary' world. They see every commonplace occurrence as an opportunity to reflect on and improve their derech – their path in life. If a Tsadik trips over a stone in their path, they will immediately think of what Hashem is trying to tell them about their Derech Hashem – even as they try to remove the stone to prevent others from tripping[734].

The tsidkus of Noah went even further. He was the first to be shown – to be able to see -- the rare and beautiful קֶשֶׁת בֶּעָנָן 'rainbow in the clouds' as the special sign from God that we're not as good as we can be: that we can and must do better.[735]

The Torah focuses on the example of Noah – the first in the Torah to be called Tsadik -- and the *'Tsadik in his generations'* [Gen 6:9]. It is primarily his view of the Mabul that the Torah presents. May we emulate Noah in his Tsidkus – and all the Tsadikim – in finding in our every experience – from the rainbow in the clouds above to the path beneath our feet -- the sacred opportunity to bring ourselves and the world closer to the Derech Hashem.[736]

See also in this sefer:

The Lomed-Vov Tsadikim – The 36 Hidden Righteous People Upon Whom the World Stands

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[734] בְּסַאסְאָה, בְּשַׁלְּחָהּ תְּרִיבֶנָּה ; הָגָה בְּרוּחוֹ הַקָּשָׁה, בְּיוֹם קָדִים.
In full measure, when Thou sendest her away, Thou dost contend with her; He hath removed her with His rough blast in the day of the east wind. **Isaiah 27:8 ;** ***"… in the measure with which a man measures it is meted out to him…"*****:Sotah 8b [See also an example from the author's own personal experience – on page 37.]**

[735] **Gen 9:8-17. See, in this sefer: The Keshes B'Anon – the Rainbow in the Clouds: Gateway to Repentance & Correction of the World II Gateway to Physics & the Edge of Unknowing.**

[736] **This 5 part piece was originally #76, p. 140-41 in the notebook version. See also mentions of the Flood and the book Ur of the Chaldees, in my companion sefer:**

A SIGN FOREVER . אוֹת הִוא לְעֹלָם

הרי אררט
MOUNTAINS OF ARARAT
AS VIEWED WITH GOOGLE EARTH AND GOOGLE TOPOLOGICAL MAPS

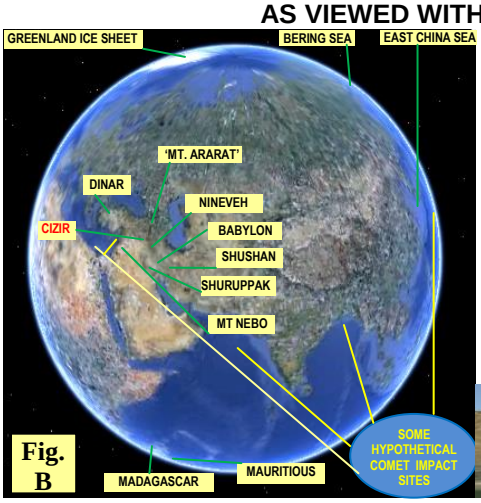

Fig. A. (Just below) View from CIZIR on Tigris River, facing NE, rooftop level, showing the "wall" of the 'Mountains of Ararat' 4 miles away and peak of Mt Judi – on the right , at black arrow, ~13 miles away.

Fig. B. Half of Earth, with 'wall', near CIZIR, 1/4th of diameter to left of center, other points noted in text - and several possible comet impact sites.

Fig. C. Mount Eval and Mount Gerizim in Israel

Fig. D. The "Two Mountains" on either side of Kasrik Gorge

Fig. E. Mount Olympus, Greece

Fig. F. Mount Ararat, Turkey and Armenia

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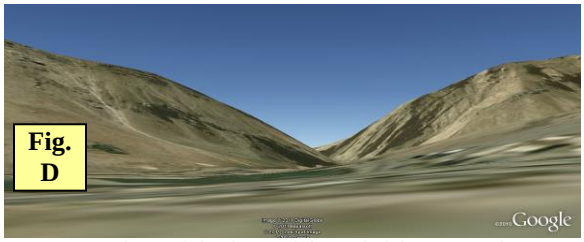
IMAGES C AND D BELOW ARE SHOWN AT THE SAME HORIZONTAL AND VERTICAL SCALE

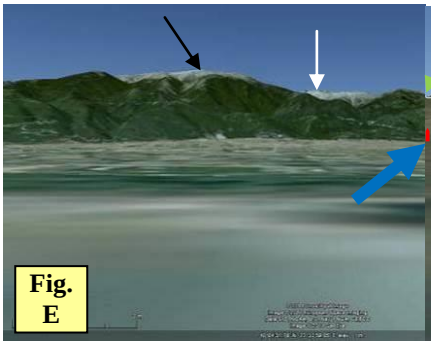
MOUNT EVAL (Right) AND MOUNT GERIZIM (Left), LOOKING WNW

with town of Nablus between them. Note how much greener Mt. Gerizim is compared with Mt Eval. The high point of Mt Eval is ~420m above the eastern end of the valley and is ~920m above sea level. The highest point of Mt. Gerizim is ~860m above sea level. The middle of the valley in both the EW and NS directions is more than 40m higher than the entrance on either the E or W ends. The level part of the valley is ~300m wide at its narrowest between the two highest points. It widens to more than twice that, going East and is ~2.5 km long between the highest parts of the mountains on either side. The distance between the high points on either side is ~5km. All figures are approximate at this time. Vantage point is 32°12'29.84"N 35°18'05.76"E. Elevation is 461m above sea level.



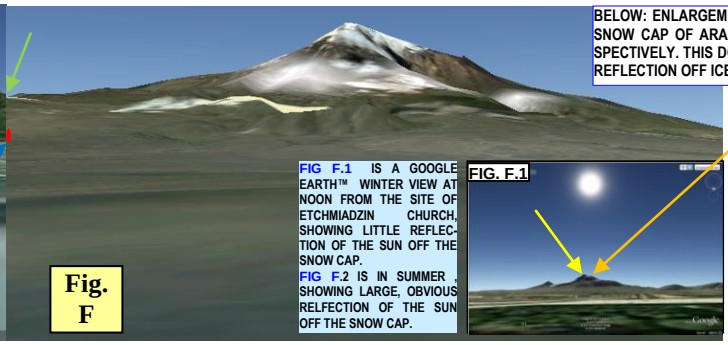
KASRIK GORGE, LOOKING SOUTH WEST

showing "two mountains" on either side. The mt. on the left is actually an extension of Mt. Judi, whose highest peak is ~10 miles to the left in this picture. The highest point on the left hand side in the picture is ~800m. above sea level and is ~400 m. higher than the river that runs through the gorge. The highest point on the right hand, western side, is ~1000m. and is substantially further away in this picture. The distance between these high points is just over 3 km. The gorge is only ~½ km long. The flat part of the valley is only ~150m wide at the narrowest. All figures are approximate at this time. Vantage point is 35°24'17.94"N 42°11'21.28" E. Elevation is 414m. above sea level. SEE P 169 FOR CLOSE-UP VIEWS.



MOUNT OLYMPUS, GREECE

Fig. E, LOOKING DUE W FROM THE BEACH ON THE MEDITERRANEAN SEA



BELOW: ENLARGEMENTS OF SUN'S REFLECTION OFF THE SNOW CAP OF ARARAT: WINTER [L] & SUMMER [R] , RESPECTIVELY. THIS DOESN'T SHOW EFFECTS OF SPECULAR REFLECTION OFF ICE –A GLITTERING EFFECT IN SUMMER.

FIG F.1 IS A GOOGLE EARTH™ WINTER VIEW AT NOON FROM THE SITE OF ETCHMIADZIN CHURCH, SHOWING LITTLE REFLECTION OF THE SUN OFF THE SNOW CAP.
FIG F.2 IS IN SUMMER , SHOWING LARGE, OBVIOUS RELFECTION OF THE SUN OFF THE SNOW CAP.

MOUNT ARARAT, TURKEY AND ARMENIA,

FIG. F, LOOKING WSW, ARARAT PLAIN, MAIN TRAVEL ROUTE, VALLEY OF ARAS /ARAXES RIVER, ELEV. ~820M. MT. ARARAT IS ALSO 31 MILES DUE S. OF ETCHMIADZIN (VALARSHABAD/VAGHARSHAPAT), BIRTHPLACE OF ST. GREGORY , SITE OF HIS CONVERTING THE KING OF ARMENIA TO CHRISTIANITY AND SITE OF THE OLDEST STATE-BUILT CHURCH OF THE WORLD'S FIRST CHRISTIAN COUNTRY(301-303CE). BUILT OVER THE SITE OF WHAT HAD BEEN A TEMPLE OF ZOROASTRIAN FIRE WORSHIP, APPARENTLY LOCATED TO CATCH THE DRAMATIC SUMMER/WINTER CHANGES IN THE SUN'S REFELECTION OFF THE ARARAT ICE CAP-SHOWN IN FIGS. F.1 & F.2

APPARENT HEIGHT OF MT. OLYMPUS & MT. ARARAT AS SEEN FROM A TYPICAL VANTAGE POINT ON LEVEL GROUND

Fig. E & F are ~same scale, joined where both mountains are at angular equivalent of ~2300m above the viewer, in a plane perpendicular to the line of sight [green arrow]. Small red 'tower' above blue arrow is ~scaled to size of 443m Empire State Building, for comparison. For Mt. Olympus, the peak used for scaling purposes, is ~2,660 m [black arrow]. The highest peaks of Mt. Olympus are ~2880m, but are several km further away [white arrow] and appear lower because of their greater distance from the viewer. The peak of Mt. Ararat seen here is ~5100m, ~4,300m above the vantage point and more than 1,600 m above what appears to be the highest peak of Mt. Olympus, RaMbaN says the Mountains of Ararat are lower than Mt. Olympus. This shows that he had no tradition that the Torah referred to the obviously gigantic mountain shown here. Aristakes of Armenia, son of St. Gregory the Illuminator who converted the Armenians at Etchmiadzin [see fig F.1 & F. 2, above], represented Armenia at the First Council of Nicea in 325CE. There he would have been in a position to promote the idea of the giant mountain as the landing place of the Noah's Ark to nearly all the religious leaders of Christianity. [SEE FOOTNOTE 687] See "The Life and Times of S. Gregory the Illuminator, the Founder and Patron Saint of the Armenian Church. The translation here given is from the original by Vartabed Matthew"

CONCLUSION

אשא

עיני אל-ההרים [737]

II GATEWAY TO PHYSIOLOGICAL OPTICS, OPHTHALMOLOGY, OPTOMETRY AND PUBLIC HEALTH

When I was a little boy of three, just learning to read, my grandmother told me something of great value to all of us who read books. She said ~"Every fifteen minutes or so, lift up your eyes [738] from the page and look out the window." I didn't understand why – and I didn't ask. My grandmother just said that it was good for my eyes[739].

In this sefer we have seen that this rule applies not only to our physical eyes, but also to our spiritual vision of the world. If we only look at the text in front of us and we don't

"lift up our eyes"

and look at the world the text refers to, we will, God forbid, develop a myopic view - hardly knowing what we're reading. Ultimately such myopia could progress to a point of near blindness to anything beyond the text on the page.

[continued on next page]

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[737] *"…I will lift up my eyes to the mountains…"* [PSALMS 121:1] The first words of this possuk were suggested as the title for this sefer by Yaakov Shapira when I first started writing down my chidushim more than 15 years before, in Bnei Brak. It begins with the initials of my name אשא .

[738] Similar expressions, 'lift up your eyes'- שָׂא עֵינֶיךָ" with 'your ' as singular, occur ten times in Tenach: Gen 13:14, Gen 31:12, Dt 3:27, Dt 4:19, Isa 49:18, Isa 60:4, Jer 3:2, Ez 8:5, Ez 23:27, Zec 5:5; There are four more with 'your' as plural: Isa 40:26, Isa 51:6, Jer 13:20, Ez 33:25.

[739] **A .** This tends to prevent or slow the development of myopia. The eye grows longer in response to sustained near work – making the eye myopic & more at rest when focused on things that are close. By shifting the gaze at regular intervals from near to far, the eye development pattern is shifted also -- so that the eyes adjust to be able to see both near & far and tend not to become myopic. There is some evidence that substantive research on this was done in Russia, but I have not yet found specific references. It was taught in Byelorussia in the early '60's.

B . In the last 20 yrs, research has shown that the eye not only grows in response to the amount of defocus, but also in response to the direction & the timing of that defocus. A relatively small amount of the visual equivalent of "looking out the window" compensates for long periods of the visual equivalent of near work. An excellent review of these phenomena is "Homeostasis of eye growth and the question of myopia," Josh Wallman and Jonathan Winawer, Neuron, V. 43, # 4, 19/8/'04, P. 447–468. ____ He notes: "if negative lenses [simulatiing near work] are worn [by chicks] all day long except four 2 min[ute] episodes of positive lens-wear [simulating looking beyond the horizon], the eyes compensate in the direction of the positive lenses [that is, they don't become myopic, but become farsighted]".(p451, citing Zhu, X., Winawer, J., & Wallman, J. ('03); words in brackets added.) A more recent study – on primates- is: "The Effect of Daily Transient +4 D Positive Lens Wear on the Inhibition of Myopia in the Tree Shrew", Neville A. McBrien ___, Baskar Arumugam, & Sangeetha Metlapally, Investigative Ophthalmology & Visual Sci., 3/'12, V.53, #3, p.1593-1601

C . As of 4/2018, 5 studies of myopia development in a total of 12.5k children in 3 countries found taking breaks was effective in reducing the development of myopia: **a.** Breaks ≥5 min. after >30 min. of near work are strongly associated with reduced myopia. [3,753 child. [Table 5 multivariate analysis] "Prevalence and Related Factors for Myopia in School-Aged Children in Qingdao" Jin Tao Sun , Meng An, Xiao Bo Yan, Guo Hua Li, & Da Bo Wang, Hindawi, J. of Ophthal., V. 2018, Article ID 9781987, 6 pages. **b.** Not continuing to do near work for more than 30–40 min. without an eye break was significantly associated with lower rate of myopia progression in multivariate analysis. [4,129 child.]"Near work related behaviors associated with myopic shifts among primary school students in the Jiading District, Shanghai: a school-based one-yr cohort study", Xiaofang You, Ling Wang,Hui Tan, Xiangui He, Xiaomei Qu, Huijing Shi, Jianfeng Zhu, Haidong Zou, PLoS ONE 11(5): e0154671. doi:10.1371/journal. pone. 0154671, May 3,2016, 17p. _____ **c.** Rest breaks of ≥5 min from continuous reading of ≤45 min. was strongly assoc. in multivariate analysis with absence of myopia. P=.008. [1,595 child. avg. 12.7 yrs] p8/13 "Near Work Related Parameters and Myopia in Chinese Children: the Anyang Childhood Eye Study." Li S-M, Li S-Y, Kang M-T, Zhou Y, Liu L-R, Li H, Wang N, et al. (Aug. 5, 2015) PLoS ONE 10(8) _____ __ **d.** "Rest after 30-min[utes] reading" was strongly associated with reduced myopia.[694 Taiwanese, child. grades 1-6] p145, "Factors Modulating School Myopia" Hong-Ming Cheng, et. al.__ Life Science J., 2012;9(1),p 142-7 ._____ **e.** Breaks of ≥5 min. every ≤30 min. of reading led to signif. less myopia after adjusting for all other factors. [2,353 child. ~12y old] p. 2909 "Role of Near Work in Myopia: Findings in a Sample of Australian School Children". J.M. Ip et al, Investig. Ophthal & Visual Sci.,7/08, V.49,#7, p 2903-10. ____ **f.** These 5 studies-- show 'breaks' are effective – but what the children were doing during these breaks hasn't yet been publ. Study b, above distinguished 2 types of intermittent distance viewing from other types of breaks – such as looking at green plants – but did not publish the result. Request for details sent to authors 2/20/2018 & 2/27/2018 [At December 20, 2022, no response rec'vd. Breaks totaling 1 min/h can be more effective than these breaks ≥5 min. See the author's "HOW NOT TO GET MYOPIA:A PILOT STUDY OF "BRISK" STUDENTS IN JERUSALEM" 50+p, 26k wrds,~100refs. – incl. a proposl for a world class study of such breaks with ≤60 Yeshiva students for ≤60 days. & prev. version at note H, below.

D . For a recent review, see: "Epidemiology of Myopia" Pei-Chang Wu, MD, PhD, H-M Huang, MD, MS, H-J Yu, MD, P-Ch Fang, MD, Chueh-Tan Chen, MS __.Asia-Pacific J. of Ophthal., p386-93,V. , #6, 11-12./'16;

E . For myopia dev. in Yeshivas: "The Influence of Study Habits on Myopia in Jewish Teenagers" Zylbermann, Roger, MD;Landau, David, MD; Berson, David, MD , *J Pediatric Ophthalmol. and Strabismus;* Sep/Oct 1993; 30, 5, p319-22

F . Today there is also something known as 'the "20/20/20" rule: Every 20 min, take just 20 s[econds], and look 20 ft away". "Vision Problems at Computers", J. Anshel & J. E. Sheedy. ch. 23, V. III, Vision And Vision Optics, Handbook of Optics, Optical Soc. of Am./Mcgraw Hill, 2010_____. It's understood that this tends to reduce eye fatigue & related issues among adults doing other sustained near work.

G . For more on my grandmother, Chaya Rochel b. R. Shlemeh Adler of Kletzk, Z"TsL, ben…Shimon HaDarshon of Frankfort [1200's], see the companion sefer: **A Sign Forever - אות הוא לעלם '.** For more on the Personal Reader™ –being developed by the author –& intended, inter alia, to reduce or eliminate myopia, see footnotes 41&547 supra.

H. After these notes were written , the author conducted a study of what is protecting some Brisk students from getting myopic: see footnote 547 & "The Effects of Habitual, Short, Distance Viewing Breaks During Reading On the Advance-ment of Myopia in Reading Intensive College-Age Men"3/10/21 https://s18798.pcdn.co/winawerlab/wp-content/uploads/sites/2136/2021/03/Myopia-Adler.pdf

Every aspect of the physical world that is referred to in Torah is a personal invitation from Hashem to "lift up our eyes" and look at what God has made. This is true whether it concerns things that are common and seemingly well understood – like lettuce [740-1] – or things far away – like the stars [740-2]. It's true for things that are rare – like the rainbow [740-3] -- and it's true for things that thousands of meforshim have commented on -- like *"love thy neighbor as thyself"* [740-4]. It's true for things that beg for answers – like the war in Afghanistan [740-5] or the question of bloodletting [740-6] -- and it's particularly true for things that are inherently unexpected –like blue herbs beyond the sea [740-7] -- or even unique– like the Mabul. [740-8]

740-1 to 740-8 See, in this sefer:

PAGE

1. 46 **TASTE AND SEE THAT GOD IS GOOD: MERORIM**
   II Gateway to Plant & Food Sciences – incl. Color Photos Of Both Garden & Wild Lettuce
2. 18 **COUNT THE STARS – SO SHALL YOUR CHILDREN BE.**
   II Gateway to Math & Astronomy
3. 14 **THE KESHES B'ANON – THE RAINBOW IN THE CLOUDS:**
   II Gateway To Repentance and Correction of the World. II Gateway to Physics and the Edge of Unknowing
4. 90 **LOVE THY NEIGHBOR AS THYSELF: ANTIDOTE TO "THE TRAGEDY OF THECOMMONS"**
   II Gateway to Local and Global Ecology
5. 66 **"JUSTICE, JUSTICE..." PUBLIC TRANSPORTATION AND THE TALIBAN.**
   II Gateway to Economics, Public Policy & History –particularly, p. 69-70, including a table, chart & 2 maps.
6. 133 **THE QUESTION OF BLOODLETTING.**
   II Gateway To Epidemiology
7. 84 **SEEING WHAT SEEMS MISSING**
   II Gateway To Color Science & Psychophysics
8. 148 **FROM THE MOUNTAINS OF ARARAT TO THE TOP OF PISGAH:**
   A Closer Look At The Mabul— The Flood Of Noah

As I was completing what is now the last piece before this conclusion: *'From the Mountains of Ararat…'* -- with no thought of writing a concluding chapter, I asked a well known Torah Scholar in New York what the Rishonim thought of Rabbi Binyamin ben Yonah of Tudela. I explained to him the difference between the Mountains of Ararat as viewed by R. Binyamin and the towering volcano that is known as Mt. Ararat today. To my surprise, he said:

מאי נפקא מינה ? --
What's the nafke mina?
("What's the practical difference?")

It was looking at a photograph of that giant, snow capped Mount Ararat [see photo p. 149] that led me to see that it didn't seem to fit what I knew of the story of the Mabul in the Torah. A closer look at the Torah and the Midrashim on the Mabul showed that there were many obvious questions about the conventional view – that Noah's Ark landed on the top of a giant mountain.

What's the nafke mina? One view follows a careful reading of the text, careful attention to the testimony of witnesses and actual study of the physical world that the text and the witnesses refer to. The result of this care and attention is the strengthening of our appreciation that the Parsha of the Mabul is not only an account of a real event - it was a real event that came about the way the Torah and Chazal say. It was also a real event that appears to be broadly consistent with processes at work in our material world that we're only now beginning to understand.

This view deepens and broadens our respect for Torah and the words of Chazal. It deepens our interest in the workings of the world and draws all of us closer to the Derech Hashem.

A. S. A.

WE'LL ALL BRING MOSHIACH

TO THE TUNE OF "WALTZING MATILDA"

WORDS BY A. S. ADLER, 5775[741],

I Once ten[742] Holy Yiddelach.[743 A]
Sat inside a Succaleh.[743 B]
Not under the shade[744] of a Coolibah Tree,[745]
And we sang as we learned,
Our holy s'forim[746] with us there,
We'll bring Moshiach, G-d willing, this year!

REFRAIN

1. We'll Bring Moshiach! You'll bring Moshiach!
2. We'll all bring Moshiach – together – it's clear,
3. And we'll do it with achdus.[747] and ahava[748 A] in the Succaleh,[749].
4. We'll all bring Moshiach[748 B], G-d willing, this year!!!

REPEAT LINES 3 & 4, ALTERNATING 2 VERSIONS OF אחדות

II Each week our Holy Meydelach.[743 C]
Light the Shabbes Lichtelach.[743 D]
And then say the Brocha, L'hadlik Ner,[750]
And we think as we dwell,
With the Shechina[751] present there,
We'll bring Moshiach G-d willing this year!

REFRAIN

Substitute the following line for line 3 of the refrain.

And we'll do it by spreading,
The lights of Shabbes everywhere.

III Each day our Holy Kinderlach[743 E],
Ask the questions in their hearts[752]:
How do we do what G-d wants of us here?
And we learn that the Torah,
With Tsneyut[753] and Chesed[754] starts,
To bring Moshiach, G-d willing, this year!

REPEAT THESE LINES, ALTERNATING 2 VERSIONS OF צניעות

REFRAIN

Substitute the following line for line 3 of the refrain

And we'll do it by learning- and
Doing what we should do here.

YERUSHALYIM IR HAKODESH[755]

IV When people round the world who care,
Will find examples everywhere,
Of The Learning, The Lights[756],
And The Chesed we hold dear,
Then we'll be on the path,
Straight and level, bright and clear,
To Bring Moshiach, G-d willing, this year!

REFRAIN

Substitute the following line for line 3 of the refrain

With learning and lights,
And kindness in G-d's Succaleh[757]

REPEAT LINES 3 & 4,

WORDS OF FIRST STANZA AND REFRAIN OF THE ORIGINAL SONG

"WALTZING MATILDA"[758]

[AS LEARNED BY A.S ADLER AS A YOUNG BOY.]

Original lyrics:1895, by poet and nationalist, Banjo Paterson.
First published as sheet music in 1903.

FIRST STANZA

Once a jolly swagman,[759]
Sat beside a billabong,[760]
Under the shade of a coolibah tree,
And he sang as he watched,
and waited while his billy[761] boiled:
"You'll come a-waltzing[762] Matilda[763], with me."

REFRAIN

Waltzing Matilda, waltzing Matilda
You'll come a-waltzing Matilda, with me
And he sang as he watched,
And waited while his billy boiled:
"You'll come a-waltzing Matilda, with me.

---

[741] 1st verse & refr. written Succoth 5772, for M.M.R. , who thought of going to Australia as a Chabad Sheliach [outreach teacher]. Finished 26 Chesh.'75.

[742] See in this sefer: CRITICAL TENTHS AND BETTER HALVES

[743] Informal Yiddish diminutives for: A Jewish men; B a Succah; C girls and women; D lights or candles; E children

[744] Tree shade can invalidate a Succah.[Talmud, Succah 9b]

[745] Eucalyptus coolabah, grows near water in Australia. From Yuwaaliyaay word, gulabaa. Ecologically like willow – which isn't native to Australia.

[746] ותלמוד תורה כנגד כלם "and the study of Torah is equivalent to them all", Talmud, Shabbes 127a.

[747] See, in this sefer: "seventy interpretations" & "in the image of God".

[748] A. Achdus אחדות & ahava אהבה : Hebrew for UNITY & LOVE, respectively.[Sephardim say achdut.] See, in this sefer: "Love thy neighbor…" Lev 19:18. B. SEE FOOTNOTE 333.2 for insight on the time of the Moshiach.

[749] See in this sefer MITZVAH IMMERSION

[750] The "blessing to light the lights"

[751] The Divine Presence of God

[752] See in this sefer "THE QUESTION OF BLOODLETTING

[753] צניעות Ashkenazim & Temanim say 'tsneyus/th',resp. *Modesty/humility*. Clothing the naked [GEN. 3:7,21]; Walk humbly with God [MICAH 6:8].

[754] *Kindness* "The essence of Torah is kindness…"SEE FOOTNOTE 388

[755] Jerusalem, the Holy City. *['Many peoples will come and say, "Come, let us go up to the mountain of the LORD, to the temple of the God of Jacob He will teach us his ways, so that we may walk in his paths." The law will go out from Zion, the word of the LORD from Jerusalem.'* Is. 2:3, Micah 4:2.] As sung in the Succah of Yeshivah Aish HaTorah, across from the Temple Mt. by the author, [avshadler@yahoo.com] accompanied & recorded by Moshe (Mark) Levin. Alternate refrain lines & 4th verse not in this recording.[21/Cheshvan, 5775]

[756] "a light to the nations". [Isaiah 42:6]

[757] The whole world in which we live is G-d's Succaleh.

[758] This is the unofficial national anthem of Australia.

[759] Australian wanderer-worker—mostly in rural areas- usually doing temporary jobs on farms . Swag= a bed roll holding all their belongings.

[760] An oxbow lake (cut-off river bend) found alongside a meandering river.

[761] A can for boiling water , usually 2–3 pints.

[762] From German *auf der Walz* : to travel while working as a craftsman & learn new techniques from other masters before returning home after three years and one day, a custom which is still in use today among carpenters.

[763] A romantic term for a swagman's bundle. 'Waltzing Matilda': To travel with a swag: with all one's things on one's back wrapped in a blanket.

WHAT WERE THE "TACHASH SKINS"

עֹרֹת תְּחָשִׁים

Some years ago, while browsing through a then recently published volume of the Koren Talmud, I came across two color photos of what the tachash might have been[764]. One showed a giraffe and the other a black spotted, yellow, cat-like animal that "hangs from trees" – the civet cat.[765] I wondered what the latter choice was doing there – how could there be such a broad choice and why would a non-kosher animal be there at all?

I'd already seen that gold in the Mishkan appeared to be used according to natural law: very malleable, "pure gold" was never used for rings or hooks that could be easily bent out of shape. Only "gold"—an alloy of gold, copper and silver that retained its golden hue but was far stronger and less malleable than pure gold --was used for such purposes[766].

This gave me a sense that the whole Mishkan --as described in the Torah and understood by Chazal -- was probably built by natural law. So, the tachash – whatever it was—had been a real and findable creature – consistent with its function in the Mishkan, the Torah in general and the words of our sages of the Talmud. I decided to see if I could find it.

The first place I looked was in the Talmud. I found that in the Babylonian Talmud, the sages thought it might have been a chaya tahora- חיה טהורה - a kosher wild animal that parted its hoof and chewed its cud– or a behama- בהמה - a domestic animal that did the same[767]. In the Jerusalem Talmud, the same sages – the Chachamim -- say that it was a "chaya tahora"[768].

In Bereisa Meleches ha-Mishkan[769], I found the sages made no mention of a miraculous animal for tachash skins or any other use. There's an apparent difference between R. Yehudah b. Ilai and R. Nechemyah on how the tachash skins were used. R. Yehudah says tachash skins and ram skins were two coverings – with the former on top – [Bam. 4:25]. R. Nechemyah says they formed one covering with a checkered or striped pattern.[770]

Midrash Tanchuma[771] has a related difference: R. Yehudah says that the tachash was a large clean beast that was in the desert and out of it they made tent sheets; R. Nechemiah, arguing with R. Yehudah there, says it was a miracle -- "לפי שעה נבואתה ונגנזה" – – created for a time & "hidden away"-- based on mention of goat hair sheets 30 cubits long [Ex. 26:7-8]

This idea of it being a unique creature created for its time and then hidden away is similar to the description in the Bavli in the same context where the sages couldn't decide whether it was a wild or domestic creature.[772]

Putting this together, we're looking for a wild, kosher, desert-dwelling animal that was relatively large and that was hidden away – or disappeared from Egypt - after the time of the Exodus. We could also imagine that its skin was not large enough to cover the whole Mishkan, but that several or many skins could be assembled in a striped &/or checkered pattern. At this point I checked to see if any animal that fit this description was known to have

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764 The tachash was an animal whose skin was used as part of the cover the Mishkan. [Ex 25:5]

765 This is what I remember, however, the volume with these photos I now have in front of me in the National Library of Israel, Koren Talmud Bavli, V.2, tractate Shab., pt.1,1st Hebrew English Ed.,'12, shows 3 photos: a yellow-orange cat-like animal with black stripes & spots that climbs trees: genet – "possibly the *Genetta terrasancta* – unique to Yisrael"[P129]; narwhale & giraffe, p132; 28:a-b[Jul,8,'19] The genet & the civet have same subfamily & similar appearance & habit.

766 See "RINGS OF GOLD" p54-6 & GOLD AND PURE GOLD IN THE MISHKAN AND CLOTHING OF THE COHEN GADOL, p 222

767 "ולא הכריעו בה חכמים אם מין חיה הוא אם מין בהמה הוא" Talmud Bavli, Shabbes 28a ,Schott. 28a2-3,28b2 ____

768 " ורבנן אמרין מין חיה טהורה. וגדילה במדבר. " Jerusalem. Talmud: Shabbes 2:3, Shott. 20b4-5 ____

769 "Baraita De-Melekhet Ha-Mishkan: A Critical Edition with Introduction and Translation"Robert Kirschner, 1992, Hebrew Union College Press, DOI:10.2307/j.ctt17mvhkm, P.: 320 ____

770 We'll come to this again when we look more carefully at the checkered or striped pattern, where we'll see that there's no contradiction between R. Nechemiah & R. Yehudah b. Ilai

771 Buber, Terumah 7.9, Ex26.7

772 א״ר אלעא אמר רשב״ל אומר היה ר״מ תחש שהיה בימי משה בריה בפני עצמה היה ולא הכריעו בה חכמים אם מין חיה הוא אם מין בהמה הוא וקרן אחת היתה לו במצחו ולפי שעה נזדמן לו למשה ועשה ממנו משכן ונגנז

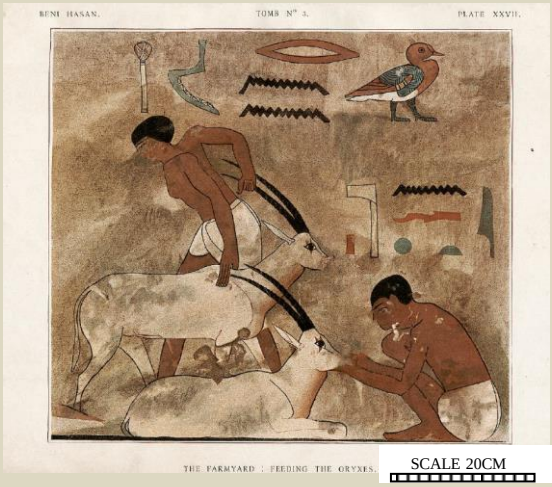
disappeared from Egypt during or shortly after the time frame of the Exodus. I quickly found a remarkable study of the history of large animals in Egypt – published only shortly before my query- in the Proceedings of The National Academy of Science [PNAS] of the United Sates. They were not looking for the tachash.[773] I did not have to worry that they were trying to refute the Torah.

Table 2 of the study [See next page] shows the disappearance of large animals over thousands of years of Egyptian history. Looking in the columns representing 3250-3520 years ago – the period that would include the Exodus – there were only three large kosher animals for which evidence disappeared from Egypt in that time frame[774]. Of the three, there were only two that probably became locally extinct in Egypt in that period- and only one of these lived in the desert: *Oryx beisa*.[774]

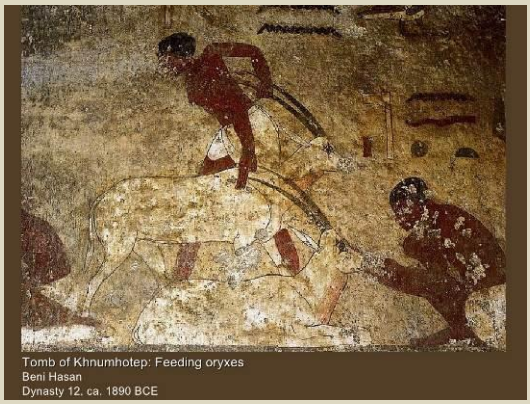
The Oryx Beisa – usually a light brown color -- lived in the eastern deserts of Egypt.[775] The PNAS reference to the last occurrence found in the archeological record is to wall paintings in the tomb of one of the Governors of Oryx Province of Ancient Egypt – from the 12th Dynasty – about 3900 years ago[776].

A B C

D



E



FEEDING ORYXES IN EGYPT
~3900 Years ago

Drawing **D** [1891-3] & Photograph **E** of same wall painting, the latter taken several decades later. It isn't clear at this point how much of the difference is due to deteroration during those decades & how much to the efforts of the painter. From large # of white areas in body of man on lower right, it's likely much of the difference is deterioration. [North wall, BH3] See also p 207 for color painting of white Oryx in a hunting scene from ~4000y ago.

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773 The primary motivation for the study had more to do with ecology and climate change. "Collapse of an ecological network in Ancient Egypt" Justin D. Yeakel, M.M.Pires, L.Rudolf, N.J.Dominy, P.L.Koch, P. R. Guimarães Jr. & T. Gross. Edited by J. S. Brashares, U. Cal., Berkeley, & accepted by the Editorial Board Aug. 11, '14 (rec. for rev. May 8, '14, PNAS 1st pub. Sept. 8, '14,____, _____

774 [All 3 are circled, next p.][Tho' called Oryx Beisa in PNAS study, since oryx leuk. is not listed at all & other near contemporaneous art is more like oryx l.[p 197,207], this, or a mixed breed is most likely depicted here. The other large kosher animal that disappeared from the record in that time frame was *Hippotragus equinus* - the roan antelope, ≥250kg, lives in savanna – not desert. 3rd animal was *Dama mesopotamica* "Persian fallow deer–inhabits woodlands/savannah and did not disappear until a century or more later than the first two.

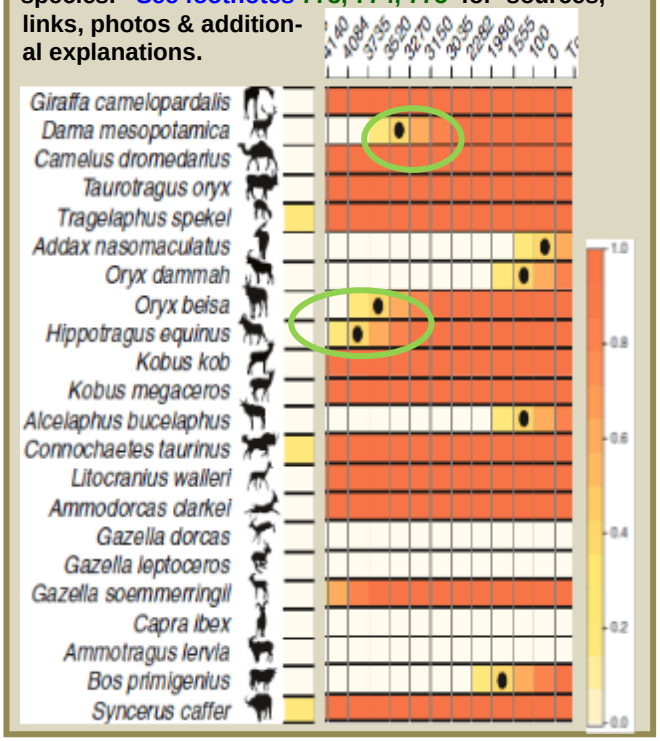
775 **Fig A, top, right: Oryx Beisa:** Grey-brown coat separated from white undersides by thin black flank stripe. Black bands above 'knees' of front legs. Conspicuous black facial markings incl: thick stripe running from base of horns, through eye, to lower cheek, bell-shaped nose patch which doesn't usually touch cheek stripes, & a patch on forehead. Thin black dorsal stripe which runs into the black, tufted tail. Ears: long & narrow, Horns: .75-1.2m long, narrow, & virtually parallel, ridged on lower 1/2 *L*:1.6-1.9m; *Shoulder Ht*: 1.1-1.2m ,*Tail Length*: .7-.8m;150-200kg. _____ photo _____

Fig B, top, right; Oryx leucoryx: '…bright white coat is extremely reflective…a cooling mechanism in the parching desert.' head+body: 1.53-2.35m; tail .45-.9m; shoulder ht: 0.9-1.4m. Mane extends from head to shoulders, tail is tufted. Males also have tuft of hair on throat. Both sexes have fairly straight horns .6-1.5m long. In general, adult coloration varies from cream to grays browns & they may also have striking markings of black & brown. "Did the Arabian Oryx live in Egypt during pharaonic times?" N. Manlius, *Mammal Rev*. 2000, V. 30,#+1,65–72. Notes: symbol of Oryx Nome, E. of Nile, is Oryx L. Has color drawings of Oryx L in Eastern Egypt~3400 BP._____. _____ photo. Note that oryx in figs D & E have no dark markings at all.

Fig C, top, right; Oryx dammah-Scimitar-oryx:"…have numerous physiological adaptations to desert life which allow them to go without drinking water for weeks."Coat: white with neck & chest a bright russet. There may be a light wash of russet over flanks & thighs. Facial mask consists of vertical russet stripes which pass through eyes & a wide reddish nose strip. There is a faint ruddy flank stripe. Long, tufted tail is dark brown on the outer half. Scimitar horns:1-1.25m. *Body L* 1.60-1.75m; *Ht*: 1.10-1.25; *Tail L.*: .6m; *Wt*: 180-200 kg Found far west of the Nile – but not east of Nile _____

776 https://digi.ub.uni-heidelberg.de/diglit/newberry1893bd1/0004?sid=bbb8b0d73469a9fd83e3b19d53888a41
https://ia600309.us.archive.org/17/items/benihasan00griffgoog/benihasan00griffgoog.pdf https://www.slideshare.net/guestac65947/8-middle-kingdom2

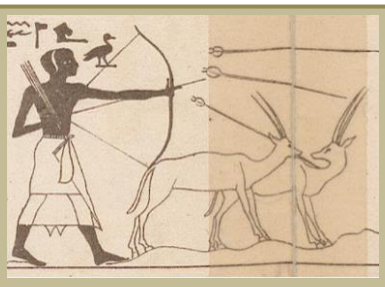
To save space, table was altered to show relavant time frame & only cloven hoofed, non-carnivorous species. See footnotes 773, 774, 775 for sources, links, photos & additional explanations.



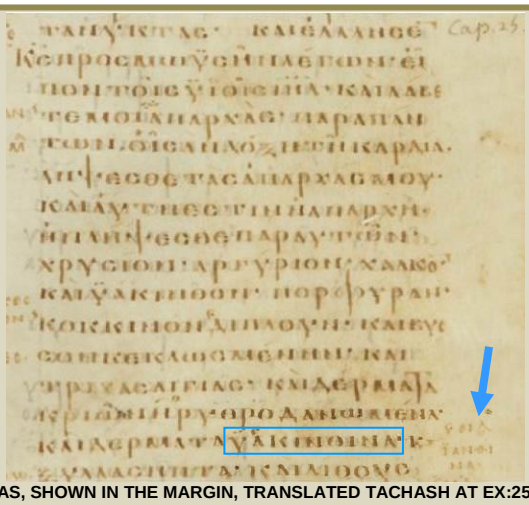
Accurate copies of the actual wall paintings show a white bodied Oryx– the color of the Oryx Leuckoryx or Oryx Dammah. But the latter has scimitar shaped horns – not shown in these artworks - and the former has distinctive black markings on the face and legs[777]. So it may've been a specially bred, possibly albino[778], semi-domesticated, variety- having some characteristics of both- or all three.

WHAT COLOR WAS THE TACHASH-תְּחָשׁ ?

At least four Tannaitic sources point to a blue-violet color:the translation of Akilas-עקילס- and Sumchos[831-B] in Greek[779] and the comments of R. Yehudah and R. Nechemyah in the Talmud.



HUNTING WILD ORYX
IN EASTERN DESERT OF EGYPT ~3900 YEARS AGO
NORTH WALL OF TOMB OF KHNUMHOTEP II, GOVERNOR OF ORYX PROVINCE, BENI HASAN, ROCK-CUT TOMB 3 (BH3) [ORIGINAL ~60 CM HT]



AKILAS, SHOWN IN THE MARGIN, TRANSLATED TACHASH AT EX:25:5 AS ΙΑΝΘΙΝΑ *IANTHINA*~VIOLET. THE OTHER TRANSLATION SHOWN HERE IS ὑΑΚΙΝΘΙΝΑ* ~HYACINTH ~BLUE*
[6TH-7TH CENT. CE GREEK MS [CODEX COISLINIANUS OCTATEUCH, p. 55v/118 of 472] OF EX 25:1-5 WITH HEXAPLARIC ANNOTATION OF οι λ = *hoi lopoi*, GREEK FOR 'THE REST', INCL. AKILAS. SEE ALSO MS. OF EZ:16:10, NEXT PAGE.
[AS EXPLAINED BY OXFORD U. PROF. ALISON SALVESEN, 3/30/16.]SEE 832831-B
alison.salvesen@orinst.ox.ac.uk https://gallica.bnf.fr/ark:/12148/btv1b84683074/f118.jpeg?download=1
* USED FOR TACHASH IN TARGUM SHIVIM/SEPTUAGINT. HOWEVER, IN AKILAS' TIME, WORD WAS ASSOCIATED WITH AN OBSCENE STORY IN GREEK MYTHOLOGY & ALSO WITH A BROADER RANGE OF COLORS- INCLUDING PURPLE & RED - THAN THE WORD FOR VIOLET. GREEK-ENGLISH LEXICON, HENRY GEORGE LYDEL & ROBERT SCOTT, 8TH ED, 1882, P. 690 &1593

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777 These black marking help camouflage, tell healthy animals from unhealthy albinos & reduce glare from scattered light near the eyes.

778 Normal Oryx skin is black – even when the hide is white.*"Oryx dammah"* '06, P. Devillers & J. Devillers-Terschuren, p17.

779 A.1 Jer. Talmud Megillah, Ch 1 H.9, 12b[4] Schott.
"R' Yermiyah said in the name of R' Chiya bar Ba: Akilas the proselyte translated the Torah before R. Eliezer and before R. Yehoshua and they praised him and said to him; " You are beautiful beyond other men [, charm is poured upon your lips , therefore God has blessed you for eternity]Ps. 45:3

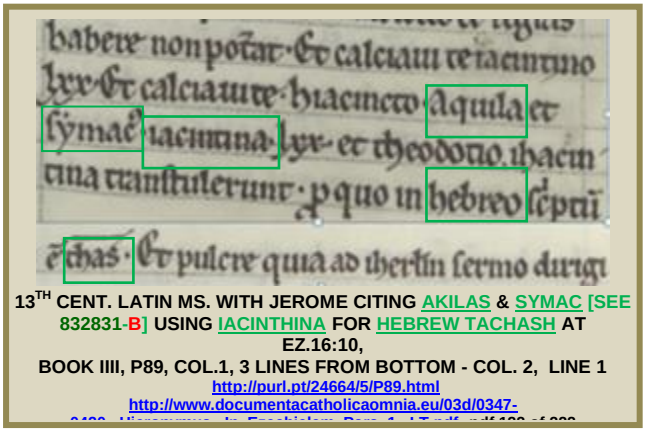
רבי ירמיה בשם רבי חייה בר בא תירגם עקילס הגר התורה לפני רבי אליעזר ולפני רבי יהושע וקילסו אותו אמרו לו (תהילים מה):
' יפיפית מבני אדם [הוּצַק חֵן, בְּשִׂפְתוֹתֶיךָ עַל-כֵּן בֵּרַכְךָ אֱלֹהִים לְעוֹלָם."]

A.2 'Praised' & 'farer' וקילסו & יפיפית incl. Akilas' name & Yafet [Noah's son whose progeny incl. Yavon/Greeks], respectively. *"...note how u-niquely crafted this precise passage is... cleverly punning both on Aqui-la's name & on the prophecy of 'Japheth in the tents of Shem.'"* Noted in: "Aquila's Greek Targum: Reconsidering the Rabbinical Setting of an Ancient Translation", Anthony Giambrone, Harvard Theol. Rev,v.110#1,2017,p24-45. He also notes, in the name of R. Saul Lieberman [1898 – 1983, p17-18, "Greek in Jewish Palestine" 1942, 234 pdf pages, who cites same quote of R. Eliezer & R. Yehoshua, noting they must've known Greek very well to make such a comment on Akilas' work.] & others, that there were apparently 2 translations by Akilas: a more literary & a more precise, literal, word for word work. [See Reider & Turner, bottom of p xi, at →] A.3 T. Bavli has a parallel passage [Meg 3a[1] Schott.] in this context: "And R. Yirmiyah said & some say R' Chiya bar Abba 'The Targum of the Torah composed by Onkeles from the mouth of R' Eliezer & R' Yehoshua.'"

וא"ר ירמיה ואיתימא רבי חייא בר אבא תרגום של תורה אונקלוס הגר אמרו מפי ר' אליעזר ור' יהושע.

B. Schot Jer. Talmud, at note 26 [p.12b[4]] connected with the quote above: "The Korban HaEida indentifies Akilas as Onkelos." The Korban HaEida [R. Dovid Frankel -דוד בן נפתלי הירש פרנקל- Desau/ Berlin 1704-62] is one of the early commentaries on the Talmud Yeru-shalmi. C. see also Midrash Rabbah Vayikra, 11: [End of Chap.11] Shemini, Mesorah 2012, includes a quote of a translation by "Akilas " with a transliteration of his Greek translation in Hebrew letters. D. Here is an example of Akilas interpeting before R. Akiva:

רבי יוסי בשם ר` יוחנן תירגם עקילס הגר לפני רבי עקיבה: והיא שפחה...
R. Yose said in the name of R. Yohanan: Aquila the proselyte translated before R. 'Aqiva: 'as she is..." J.T.Kiddushin, 1.1 Schot. 5a3 E. Ambrosiano O 39 sup PSALMS Hexpla Inclu Sumchus And Akilas – palimpsest ~150vs ps


habere non potat. Et calcaui te tacmino
lyx. Et calcauit te hiacincto aquila et
symac iacmina lyx. et theodotio hiacin
tina transtulerunt. p quo in hebreo scptā
chas. Et pulcre quia ad therlin sermo durgi

13TH CENT. LATIN MS. WITH JEROME CITING AKILAS & SYMAC [SEE 832831-B] USING IACINTHINA FOR HEBREW TACHASH AT EZ.16:10,
BOOK IIII, P89, COL.1, 3 LINES FROM BOTTOM - COL. 2, LINE 1
http://purl.pt/24664/5/P89.html
http://www.documentacatholicaomnia.eu/03d/0347-

Akilas produced a very literal translation of the entire Tenach in Greek.[780] We have Akilas' Greek translation of 'tachash' in two places: Ex.25:5 and Ez.16:10.[781],[831-B] In both, it's ἰάνθινα - *ianthina* –like English 'hyacynth' but meaning 'violet'- a color in the blue-violet-purple range.

In the Jerusalem and Babylonian Talmuds,– R. Yehudah bar Ilai[782] and R. Nechemyah[783] -- comment on the Tachash in a way that relates to its color. In both Talmuds, it's in the same discussion in the gemorah in Shabos where they discuss what kind of animal it was. The most well known is in the Bavli [Shabbos 2:3; 28a[3]] where we find:

> **"R. Abba challenged [on the basis of the following beraisa] 'R. Yehudah says: "There were two covers, one of reddened rams' hides, and one of tachash hides." R. Nechemyah says: "There was one cover and it was like a *tala ilan* –תלא אילן" [*understood here to be the name of an animal that 'hangs from trees' – the genet or civet cat*.] But the תלא אילן is unclean! This is its meaning: like תלא אילן which has many colours, yet not תלא אילן , for that is unclean, whilst here, clean." R' Yosef[784] said accordingly this is why we translate *tachash* [in Aramaic] as *sasgona* that rejoices in many colors."**

מתיב רבי אבא רבי יהודה אומר שני מכסאות היו
אחד של עורות אילים מאדמים ואחד של עורות
תחשים רבי נחמיה אומר מכסה אחד היה ודומה כמין
תלא אילן והא תלא אילן טמא הוא ה"ק כמין תלא
אילן הוא שיש בו גווינין הרבה ולא תלא אילן דאילו
התם טמא והכא טהור א"ר יוסף א"ה היינו
דמתרגמינן ססגונא ששש בגווינין הרבה.

In Yerushalmi,[Shab. 2:3, 20b[4]-21a[1]], we have:

> **'R. Yehudah, R. Nechmyah and the Rabbis [comment on Tachash] R. Yehudah says: "It is called *teyenun* - טיינין because of its color." and R. Nechemyah says '*galactinin* - גלקטינין'. And the Rabbis said it was a type of chaya tahora- חיה טהורה and it grew in the desert.'**

יהודא אומר טיינין לשם צובעו נקרא.
ור' נחמיה אמר גלקטינין.
ורבנן אמרין מין חיה טהורה. וגדילה במדבר.

The key to this is the first word in this list: *tala ilan* –תלא אילן . This is supposed to be R. Nechemyah's way of describing the appearance of the tachash by reference to an animal

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[780] For more on translation of Akilas & contrast with Targum Shivim – the Septuagint – see footnote 274, Onkelos see footnote 630

[781]-A There is an explicit mention of Akilas' translation of Ez.16:10 at *Eichah Rabbah* 1.1: "…clothed you also with richly woven work. Rabbi Simai said:"in purple garments." Aquila translated: "embroidered garments." רבי סימיי אמר פורפירא תרגם עקילס אפליקתא ואלבישך רקמה..."

B- Akilas' Gk. transl. was used ≥400yrs where the language of the Roman governmnt was Gk: in E. Mediter., incl. Israel, Egypt & parts of Syria, Turkey,Greece & neighboring lands. Jewish demand for this transl. dropped sharply when Arabic Moslems replaced Greeks - hundreds of yrs before Cairo & its famed Geniza existed. The result is that most wornout copies of Akilas went into graves – & very little of it has been found in the Cairo Geniza. [see footnote 274 D & E for more on this]

C- However, some Christians recognized significant discrepancies between the Greek translation made under the influence of Ptolemy Philadelphus – the 'Septuagint' –& the Hebrew text extant in their day - ~1800 yrs ago– & a great Christian scholar, Origen, produced a translation that relied on the Hebrew text of our Rabbis & at least 3 Greek translations made by Jews for Jews – incl. the translations of Akilas & Sumchos[831-B].

D- He made a book with at least 6 columns – & ~6k pages – the Hexapla – in which he had the Hebrew in the 1st col, Greek transliteration of the Hebrew, each of the 3 translations made by Jews for Jews – incl. those of Akilas & Sumchos[831-B] - the Septuagint & – in the last columns, his best guess for the Greek transl.. For each word in this col, he put symbols indicating which translations he relied upon. If it was Akilas, he'd put an alpha, if it was all 3 translations made by Jews for Jews, he'd put a gamma – the 3rd Greek letter. If all the rest of the sources used the same word he'd put a lambda [as shown at blue arrow previous page].

E- This last column was recopied by scholars who came to Caesarea, Israel, where the work was kept ~400yrs. Some of these copies included the symbols showing where each word came from. Based on such manuscripts or their copies we know how Akilas [and Sumchos – see 831-B]translated >2k Hebrew words in Tenach.

F- "An index to Aquila Greek-Hebrew, Hebrew Greek Latin with Syriac and Armenian evidence" Joseph Reider and Nigel Turner, Leiden, Brill '66, 340+p; p 115 has transl. into both Greek & Latin. For use at Ezek. 26:10 it's Akilas & Symmachus; at Ex. 25:5, it is all sources.

[782] Yehudah bar Ilai's teachers were his father Rabbi Ilai (himself a pupil of Eliezer b. Hyrcanus), Rabbi Akiba…. & was forced to flee Hadrian's persecution[132-138?]. He received the right to express his opinion before all others…on the ground that he was the best authority on the traditions. ____ See also footnotes 102 & 269

[783] One of the great students of Rabbi Akiva, and one of the rabbis who received smicha from R' Judah ben Baba.

[784] For brief bio. of R. Yosef, see footnote 800.

תח (שבת כח ע"א) תלא אילן: ביריה קטנה היא מן חיות, וכמות חתול גדול, ומרוקם הוא ויש בו גונים הרבה, וטמא הוא. ושמענו שמצוי באיספמיא שתופסין בו שפנים, ובלשון ארמי שיסקא, ובערביא זבזב. אר אי איפשר לפרשו, דקאמרינן בבמה מדליקין (שם ע"ב) לפי שעה ניזדמן לו למשה וניגנו.

TSHUVAH OF R. NATRONAI BAR HILAI GAON ON
tala ilan –תלא אילן
SEE NOTE B, BELOW

that "hangs from trees". If he thought, as some understand it, that it looked like a black spotted yellow animal[785] – why didn't he say the tachash was yellow with black spots? The Torah has well known words for spotted and speckled animals – as we learn from the time Yaakov Avinu was shepherding the sheep and goats of Laban[786]. There is also a well-known word for yellow – צָהֹב [787-A] – as we learn in connection with Tsaraas –צָרַעַת [787-A] and of course, there's a common word for black: שָׁחֹר [787-B]. Why would R. Nechemyah – in his effort to clarify - use such a circumlocution – with a word that occurs only here – in all of the works of Chazal?

This is even more puzzling as – if the intent of R. Nechemyah was to tell us that the tachash was yellow with black spots – he could have used the word *leopard* - נָמֵר – an animal known in Tenach for its spots.[788] With its retractable claws, it's also an excellent tree climber and has a large pelt[789].

The true meaning of what R. Nechemyah said will be clear after we look at the meanings of the three remaining words. First let's look at what the Yerushalmi has R. Nechemyah saying: *galactinun* - גלקטינון [790]. The editors of the Schottenstein Edition of the Yerushalmi bring two groups of explanations; One group says that it is another name for *tala ilan* -- another group – including *Yafeh Mareh* - יפה מרא [791] and *Korban HaEidah*[779-B] say *galactinin* was a kind of dye used for dying the skins that were called tachash[792, 794-B.1]. [Note 1, p 21a1]

The next word – actually coming before *galactinun* in the Jerusalem Talmud -- is *teyenun* – טיינין [793]. This is R Yehudah's understanding of Tachash –and he says it was called this because of its color. What color? The Schottenstein cites "Aruch" as saying it is the color blue[794-A & 794-B.2,3]. The same note

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785 **A** This idea is found in the Aruch, a dictionary of Hebrew & Aramaic words found in the writings of Chazal, by R. Nathan ben Yechiel of Rome. [1035-1106] who traveled to Babylonia & many other places in the course of his life. He notes that תלא אילן is a Greek name for a small, colorful, cat-like animal that is known in Arabic as zavziv - זבזיב & in Aramaic as shiska- שיסקא pdf p 482 '[Daniel Bomberg , Venice, רצא http://www.hebrewbooks.org/42537] from a tshuvah of R. Natronai R. Hilai Gaon- נטרונאי בן הלאי, head of Sura Academy early in 2nd half of 9th century – author of 550+ responsa, see "Halachic responsa of R. Natronai Bar Hilai Gaon" 1981] -noted on p 226, note 43, HaAruch al HaShas, vol 1, תשנ"ב , Bne Braq.

B Actual tshuvah, [shown top, right , next page], found in "Tshuvot Rav Natronai bar Hilai Gaon- תשובות רב נטרונאי בר הילאי גאון -edited from manuscripts and early editions with introduction indices, explanatory notes and comments by Robert Brody , Ofeq Institute, Freidberg Library, 5754, p 577

786 Gen, 30:39 "streaked speckled and spotted " -עֲקֻדִּים נְקֻדִּים וּטְלֻאִים

787 A. Lev. 13:30; also Ps. 68:13, B. Lev. 13:31

788 Jer. 13:23: *"Can the Ethiopian change his skin or the leopard his spots? Then also you can do good who are accustomed to do evil. -* ...הֲיַהֲפֹךְ כושִׁי עֹורֹו וְנָמֵר חַבּּרָתֹו" Also: Jer. 5:6, Is.11:16, Hos 13:7, Dan. 7:6 : "...like a leopard..נְמַר כְּ [Aramaic]

789 If R. Nechemyah's point was to tell us that it was the hide of a large, black spotted, pale yellow, kosher animal, he could have even noted the Giraffe – which is also understood-by R. Saddia Gaon and the Targum Shivim - to have been mentioned in the Chumash – as the Zemer זָמֶר at Dev. 14:5]. [noted in "Giraffe: A Halakhically Oriented Dissection" Doni Zivotofsky, Ari Z. Zivotofsky & Zohar Amar, The Torah U-Madda Journal, Vol. 11 (2002-03), p. 203-21 _____] The spots of the male giraffe turn black as they get older than about ten years. "Darkening coat colour reveals life history and life expectancy of male Thornicroft's giraffes" P. S. M. Berry1 & F. B. Bercovitch, Journal of Zoology 287 (2012) 157–160 _____

790 Appears close to "glaukinos"[see footnote 794 B.3]

791 By Samuel Ben Isaac Ashkenazi Jaffe,(d. late 16th cent), commentator on the Midrash. Jaffe was rabbi of the Ashkenazi community of Constantinople. Jaffe's fame rests upon his Yefeh To'ar, a comprehensive commentary to the whole of Midrash Rabbah, which reveals an extensive knowledge of the relevant literature.

792 "טיינון מין צבע וכן גלקטינון ור"ל דתחשים היינו עורות אילים צבועים נקרא בצבע זה וז"מ על שם צבעו נקרא שקרא העור על שם ציבעו:" *"Teyenun* is a color, as is *galactinin*.... The *tachashim* were goat skins with this color.... The skins were named according to their color." ~*transl:ASA:* ספר יפה מראה p.64,note א,v.א.JRRcall# 2=י 84.5 v.1 ; השלם עם המפרשים יפה מראה עין יעקב אגדות תלמוד ירושלמי : תש"ע

793 Appears close to "tianos" [see footnote 794 B.1]

794 **A.** [Note 42, p 20b4], "Aruk haShalem" by Alexander [Chanuch Yehudah] Kohut, [1842–94] based on 7 manuscripts of "Aruch" by Nathan ben Yechiel of Rome [1035 –1106] [see footnote 785], in vol. 4, p 29, 1925, clearly states that it means blue – violet – like techeles. "HaAruch al Talmud Yerushalmi, by Meir Mezlish, publ. in תשנ"ד ~1994 -with haskamas from both R. Nissim Kereletz & R. Shmuel HaLevi Wosner, says that it is a short form of the Greek: Yakintinon and has the color of techeles. p.212, vol. 1, [copy exact text]

B. 1. βενετιανός,"a favorer of the blues". P 281, part meaning blues underlined – pronounced *tianos* [τιανον =tianun OK] Marc. Ant. 1.5; cf. C. I. 6354 [Marcus Antoninus Imperator = Emperor of Rome & Philospher, Marcus Aurelius, 161-180CE, Emp.; lived 121-

in the Schottenstein says there are two basic approaches. One group of commentators says that R. Yehudah is referring to a non-kosher animal that had a bluish color. The other group sees the tachash as made of the hide of a kosher animal – like ram skins -- dyed the color of *teyenun*.[795]

An obvious question here--particularly for those who looked through footnote794B– is why the Rabbis didn't use a more common and presumably less ambigous word related to *indigo*. It's listed [as *indikos*] among the Greek words meaning blue, and entered the vocabulary of educated Greeks decades before Rabbis Yehudah and Nechemyah discussed tachash.[794-B.4] However, while in this context today 'indigo' clearly indicates blue, in the time of the Rabbis- and for 50 years before- it had primarily meant "from India."

The last of our three intereprations of tachash – and the most well-known- is associated with the Aramaic translation of Onkelos, printed with most Hebrew Chumashim. He translates tachash with the Aramaic word '*sosgona* – ססגונא '.[796]

Rashi explains the meaning of this Aramaic word, based on a discussion in the Talmud[797]. There, we saw, R. Yosef elucidated it with the Hebrew that sounds like it but is spelled differently: 'that it rejoices with its many colors.-*'Sheh sos b' gavnin harbeh*' - ששש בגוונין הרבה' [see footnotes 782,783,784]

But *sos*–סס-in Aramaic means a moth or worm[798] and *gona* - גונא means a color in Old Persian. So, it looks like a reference to a color associated with a particular moth or worm.[799] But what moth or worm? and what color or colors? Considering what we have already – from Akilas on Tachash and from both R. Yehudah and R. Nechemya in the Talmud Yerushalmi – the most likely candidate for *sosgona* is that it's related to blue.

If it were merely blue – we'd expect the commentators to use a basic Hebrew or Aramaic expression for blue. R. Yosef's explanation- "rejoices with its colors" -- suggests a range of blues – greenish blue, reddish blue – lighter blue and darker blue. This is supported by R. Yosef's reputation for understanding the subtleties of Aramaic[800]. It also explains the

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180CE]; 2. γλαυκη-πόρος "blue rolling", part meaning blue underlined, p 310, pronounced *glaukee*; 3. γλαύκϊνος "bluish gray", pron. *glaukinos* [γλαύκϊνον OK] *Plut. 2.821 E. [Lucius Mestrius Plutarchus, Roman biographer & essayist, 46-120 CE] maybe this combines with* τιανον *to yield* γλακτινον *glaktinon?;* 4. ινδικός "dark blue dye – indigo", pron. *indikos*, [ινδικόν OK] p. 703; from Dioscorides Περὶ ὕλης ἰατρικῆς ["On Medical Material"] written 50-70CE. Also meant 'Indian' [from the time of Heroditus, 484– 425BCE] and a kind of pepper. 5. καλαϊνος "shifting between blue and green",_____ pron. *kalainos*, p. 733; [καλαϊνον OK] Anthologia Palatina, Book 7, chap. 428_____ Epigram by 1st cent. BCE Greek poet-philos, Meleager of Syria, Tyre & Cos "On Antipater of Sidon"_____actual word shown is καλλαΐνα [a form of καλάινος] [Tyre & Sidon were centers of snail based purple & techeles dye production.] 6. γαλαϊζω "to be blue" pron. *galaizo*, 733; 7. κυανο "dark blue", pron. kyano, p. 851; κύανος " a dark blue substance" pron. kyanos, p. 851 [κύανον OK]; 8. ύακινθινο "hyacinth color", pron. yakinthino, p. 1593; 9. ύπερκυανος "very dark blue" , pron. yperkyanos, p.1615; 10. χαλκ-ανθον or χαλκανθος "solution of blue vitriol= sulphate of copper", pron. chalk-anthon or chalkanthos, p. 1709; 11. ιανθινος or ιανθον "violet coloured" pron. ianthinos or ianthon, p.690.

C. The above is result of a search for classical Greek words with blue &/or violet in definition, in the down-loadable version of "Greek-English Lexicon", Henry George Liddel & Robert Scott, 8th Ed, 1882.

D. Classical Greek has ending ός [os]& ον [on] for, respectively, nominative & accusative singular of most 2nd-declension nouns. https://en.wiktionary.org/wiki/Appendix:Ancient_Greek_endings So, most words ending in 'os' can also end in 'on'. Check with expert

795 This group includes *Yafeh Mareh* & Korban HaEida, supra, as well as Sefer Nir by Meir Meirim Shafit [~1800-1872]

796 This is also the translation of tachash found in Targum Yonason & the Pshita version – in Syriac-Aramaic.

797 Shabbes 28a. In parallel discussion in Jerus. Talm., at Shab.2:3 [20b4-21a1 in Schottenstein English] sosgona isn't found.

798 give sources. "red or purple":Old Persian [2300+bp] ['gauna':old pers=color,'unattested'[14[סס:Aramaic=moth. Bright blue moth/butterfly; e.g: ' adonis blue' (*polyommatus bellargus*)? See fig. G r.v.1 byword: mothcolor=blue color? A.S.A.] Persian: vermillion, sky-blue or blue-black" 14] Fr.Paul Peeters [Pdf P53 Par 2 #3 'Epiphanius On The Twelve Stones', R. Blake, '34, שהשהשה R.V. [Harv. Prof P.O.Skjaervo, Emails 6/29-30/'16 skjaervo@fas.harvard.edu] unfinished footnote

799 This is like our words 'crimson' and 'vermillion' -- associated with the red colorant that comes from a particular type of insect. Vermillion actually comes from a mineral – cinnabar -and is named for its similarity to crimson – which comes from the kermes insect. Carmine is another red colorant that comes ffrom a different insect . Both come from a Middle Persion word; *kirm* also means "worm" in Persian. Lac is the scarlet resinous secretion of a number of species of lac insects, of which the most commonly cultivated is *Kerria lacca* – The name comes from the Sankscrit: lakh, meaning hundred thousand – from the enormous number of the insects. [from wikipedia – check primary sources before using.]

800 R. Yosef b. Hiyya [d. 333CE] 3rd generation Amora in Babylonia, & headed Pumbedita for 2.5 years, after the death of Rabbah. He ...left an Aramaic translation of parts of the Bible, which is often

word chosen by Akilas & Sumchos– connected with the hyacinth – a flower that comes in a range of "blues" from violet to purple.

Among words that might've been used that aren't merely blue[801] is *kala ilan* קלא אילן. It's the blue of a natural vegetable dye – indigo[802]. Depending on how it's processed, it may be greener or redder, darker or lighter – but it looks very much like techeles[803] –and is chemically almost identical[804]. Akilas trans-

A

— 132 —

Würde in weissen Priesterkleidern fungirt habe. (S. Pesikta der. Kah. sect. XIV.). Doch darf auch noch einer anderen Möglichkeit Erwähnung geschehen. Von *καλλάϊνος*, einer offenbar nur aus *κελαινός* gebildeten Form, führt Meurs. im glossar. noch die Nebenformen *γαλάϊνον* und *γαλαΐζον* auf, in der Bedeutung: *caeruleus, venetus.* Etymolog. auctor: *ἔνθα καὶ τὸ καλλάϊνον. ἐζὶ δὲ τὸ χρῶμα ἀνθηρὸν ἢ τὸ βενετὸν οὕτω λεγόμενον.* Vgl. das. die Stelle aus Demophil. in Ptolem. Apotelesm.: — *ὁ Ζεὺς (κυριεύει) γαλαΐζούσης (χροιᾶς) ἐπὶ τὸ λευκὸν ῥεπούσης; γαλασιό* im Spätgriechischen führt Crus. in der Turcogr. l. II. an. Es wäre also vielleicht גלמנין dieses *γαλαΐζον*, die bläuliche Farbe. — Jedenfalls ist durch diese Glosse das von Mussafia bereits erkannte, aber von seinen Nachfolgern unverstandene קלא אילן erklärt (Nedar. 41 u. sonst.), das weder einen Stoff, noch eine Pflanze bezeichnet, sondern die blaue Farbe, vom Aruch als Indigoblau bestimmt. Für *κελαΐνον* sprach man auch *κελεΐλον*, und durch die zufällige Trennung des Wortes in zwei dachte man, durch אילן verleitet, an einen Baum oder eine Staude*). Betrug, der mit dem תכלת, dem vorschriftsmässig gebotenen, getrieben wurde, veranlasste, diese indigoblau gefärbte Wolle für jenes zu verkaufen. Noch eines anderen Wortes, das eine Farbe

B

Καλλαια. τα. color purpureus, coccineus. 2. *οἱ πώγωνες τῶν ἀλεκτρυόνων, a colore.*
χώπως τὰ καλλαι' αποφαγὼν, ἠξεις παλιν. Equit. 495.
Καλλαΐνος. (κυανεος.) purpureus; cæruleus.
**ά σταλα, συνθημα τί σοι γοργωπὸς αλεκτωρ*
εστα, καλλαίνᾳ σκαπτοφόρος πτερυγι; Meleag. 123.

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quoted. It is not to be assumed, however, that he translated the whole Bible, though the Aramaic translation of the Book of Chronicles is ascribed to him & is called " Targum of Rav Yosef." https://www.jewishvirtuallibrary.org/joseph-ben-x1e24-iyya

[801] There's another word for blue כחל based on a word found at Ez. 23:40 .כָּחַל- 'to paint the eyelids – with a dark bluish-black mat'l, often made from stybnite – antimony sulfide Sb_2S_3.There's no כחל as blue in Jastrow[in Chazal] or BDB-Gesenius- only for painting eyes.

[802] **A.** In both expressions *ilan* אילן means *tree* in Aramaic. *Kala Ilan* - קלא אילן means "ashes of a tree"in Aramaic. [See footnote 794 B.5 for Greek word..] **B.** Similar to kyanos=blue stone=lapis-lazuli from Theophrastus – On Stones? Maybe a process analogous to *yeísmo* in Spanish – where an L sound becomes a y sound – but reversed. The Spanish phenomenon is called delateralization. So the process of shifting from y to l might be lateralization? Maybe an L was added to kyanos =kylanos [epenthesis] then the y was dropped [elision] yielding kalanos & the grammatical ending changed to 'n' [See footnote 794-B] **C.** [*kinahhu* is shown as Ugaritic equivalent of purple in ~3200 BP, in Table 1, [no primary source given] "Thermochromic Behaviour of 6-Bromoindigotin" I. Irving Ziderman, et al, in "The Diversity Of Dyes In History And Archaeology" 27/04/2017] [*Kelainon* :English spelling of original Greek source according to "Comprehensive Etymological Dictionary of The Hebrew Language", Ernest Klein,1987, p.578. **D.** The transformation of the pronunciation of Greek over the 500+ years of the classical period gives some idea of shifts that can -& probably did- occur in the pronunciation and spelling of words in Aramaic. _____

[803] **A.** Before we look at *sosgona* – to see where it may have come from – we should look at *techeles* – which is found so many times in Chumash, is part of the mitzvah of tsitsis and is something that we say everyday in the Shema. [Bam. 15:37-41] Ramban writes on this :

"אבל הזכרון הוא בחוט התכלת שרומז למדה הכוללת הכל, שהיא בכל, והיא שהיא מצות – (במדבר ט"ו:ל"ט) תכלית הכל. ולכן אמר: וזכרתם את כל מפני שהתכלת דומה לים, וים דומה (בבלי מנחות מ"ג) השם. וזהו שאמרו לרקיע, ורקיע דומה לכסא הכבוד וכו' והדמיון בשם גם הגוון תכלית המראות כי ברחוקם יראו כולם כגוון ההוא, ולפיכך נקרא תכלת."

'…The resemblance of the blue to 'All-כל' comes not only in the name of the color *techeles*-תכלת but also in its being the most distant color, the תכלית of all light. As things get further away, they all begin to look blue that is why it is called תכלת from kol כל all. …'

[Transl.:"The Commentators' Bible-The JPS Miqra'ot Gedolot", Michael Carasik, 2011] It means "the all inclusive"–"the ultimate end"—somewhat analogous to the English expression "The sky's the limit".

B…. T.Bav. Ber. 17a: "A favorite saying of Raba was:
The *goal* of wisdom is repentance and good deeds…"
מרגלא בפומיה דרבא תכלית חכמה תשובה ומעשים טובים...

C."...if you will be able to count them... אִם־תּוּכַל לִסְפֹּר אֹתָם Gen 15:5

כל : ל - *lomed*: a sheperd's staff -- key letter in teaching, learning – guiding; כ - *chof* -- a hand . The 2 letters chof and lomed follow each other in the order of the Aleph-Bes and in the order in the word – which not only means 'all' – but "to be able" – "to be in control" with both hands – or with the hand on the staff. Yud-י – is also a hand and the full word for "to be able" is יכל – both hands and the staff. Adding a *tof*- ת at the end makes it a noun: ability, adding a ת at the beginning makes it a future tense. So perhaps the inner meaning of the word and the color is to have ability in terms of the ultimate end - The Heavens - to "Know God".

[804] **A.** The blue techeles and the blue indigo are chemically identical but the process of producing techeles from the biological product of a snail involves transforming the naturally brominated – purple colored -- version of this chemical to the non-brominated – blue colored- version under the influence of ultraviolet light / sunlight. This process will remove almost all of the bromine- but traces will remain – making it possible to distinguish the source – even when the colors and chemistry of the blue material are identical. Adding bromine to plant sourced indigo will not produce the purple color of the snail sourced chemical as the bromine will attach to different parts of the chemical and the result looks almost as blue as the original plant material. "Indigo and Tyrian Purple—In Nature and in the Lab" by Paul F. Schatz p.1442-3, J. of Chemical Education, V.78,#11, Nov. '01

B. Koren Z.C. 2005, "Chromatographic analyses of selected historic dyeings from ancient Israel"In R.Janaway & P.Wyeth (eds.) *Scientific Analysis of Ancient & Historic Textiles: Informing, Preservation, Display & Interpretation.* Archetype Publications, London, p 194-201

C. "Early evidence of royal purple dyed textile from Timna Valley (Israel)" Naama Sukenikl, David Iluz, Zohar Amar, Alexander Varvak, Orit Shamir1, Erez Ben-Yosef PLOS ONE January 28, 2021 https://doi.org/10.1371/journal.pone.0245897

lates *techeles* with the same Greek word that he uses for *tachash*.

The word *kala ilan* is even more remarkable considering how close it is to the word that seems so out of place in this analysis so far: *tala ilan* –תלא אילן. It's just one letter different: a *kuf* – ק, where the "hangs from trees" expression has a *tof* - ת. The two letters – k and t --sound different enough to most English speakers that it may be difficult for them to imagine that they could be confused. They also involve different parts of the mouth.

Making the 't' sound involves touching the tongue to the front of the upper palate. The 'k' sound is produced with the tongue contacting the rear of the upper palate. However, it is not too difficult to produce a sound roughly midway between a 't' and a 'k' -- by contacting the upper palate with the tongue midway between where it would contact for the 'k' and 't' sounds. A person writing this sound as they heard it might equally chose a letter with either a 'k' or 't' sound – if those were the only choices[805]. The result would be that someone proofing such a record wouldn't see an error – because – in an environment where there was no standard spelling for words outside of Torah itself, either letter would be right.

This may be how "hangs from trees" got into the picture. At the time it was first committed to informal notes –in the Israel of R. Nechemyah – a frequently occurring pronunciation for this dye may have been midway between 'k' and 't'. Many years later – and hundreds of miles away – in Babylonia – when the Amoraim there were explaining R. Nechemyah – the textual progeny of the informal notes with a 't' were understood -- in pronunciation and in meaning – as "hangs from trees."

A. POLYOMMATUS ICARUS—ONE OF THE MOST COMMON BLUE BUTTERFLIES IN THE ZAGROS MOUNTAINS – BORDERING MESOPOTAMIA – WITH UP TO 5 GENERATIONS/YR. B.. DISTRIBUTION OF COLLECTED SPECIES EXAMPLES POLYOMMATUS "BLUE" BUTTERFLIES – SHOWING CONCENTRATION BORDERING MESOPOTAMIA/ BABYLONIA C. ZOROASTRIAN BLUE BUTTERFLY SYMBOL FROM IRAN—COMBINES SKY COLOR, DUALISM AND FOCUS FROM TWO SIDES WITH METAMORPHOSIS D. NANOMETER SCALE STRUCTURE OF BUTTERFLY WING PRODUCES COLOR BY CONSTRUCTIVE INTERFER-ENCE. WHITE HORIZONTAL BAR =1 MICRON = 1/1000 MM
A _____ B _____ C ____ D _____

Part of this ambiguity in pronunciation may have been due to the original source of the word *kala ilan*. It comes from the Greek καλλάίνος 'kalainos'[806]. The word *teyenun* which we have already seen is understood to be blue – could have – by a process similar to what we've suggested for *tala ilan* – developed from the Greek *κύανος*[807] – *kyanos-cyanon* – blue.

WHY SOSGONA?

If Sosgona is just another way of saying blue – why not use the same Aramaic term that is

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[805] A. Notably, Hawaiian doesn't distinguish between [t] & [k]. Samoan uses [t] in colloquial speech where [k] is used in formal speech. From wikpeida article on Hawaiian phonology _____ citing , among others : *"The Voices of Eden: A History of Hawaiian Language Studies"* Albert J; Schutz, 1994, Chapter 5 ,"Consonant Confusion"- where pages 76-79 are on the t-k confusion issue.

B. It's also possible for one sound to contain two widely separated sounds with this unified sound diverging in different locales to focus on one part or another. This may've been the case of the French & English word pairs: 'guerre & war' & 'Guillaume & William'. The original sound may've had a fricative, voiced 'g' sound in the back of the mouth & a simultaneous 'woo' sound in the front of the mouth. This sound split into a 'w' in English side & a 'g' in French.

[806] Jastrow, p 1371, cites Greek καλλάίνον, Latinized *as callainum* [*callainus, callaina*, pale green, greenish-blue, turquoise-colored] from A. Michael Sachs[1808-64], Beitraege zur Sprach- und Alterthumsforschung: aus jüdischen Quellen,v.1,p.131-2,1852[See A on top of previous page] _____

B. "Lexicon Graeco-Prosodiacum", Thomas Morell, Edward Maltby, p 433 [See B on previous page] _____

C. "Textological problems connected with Greek in Hebrew script are numerous, in so far as the compositions containing Greek loanwords were copied in the regions where the knowledge of Greek was either no longer current or altogether nonexistent. This resulted in notoriously faulty textual transmission with lots of mechanical mistakes leading to the corruption of initial renderings and confusion of word boundaries. Even diligent scribes misunderstood their predecessors when copying..." P 203,"Greek Loanwords In Rabbinic Literature: Reflections On Current Research Methodology", Julia G. Krivoruchko, 2012, in "Greek Scripture and the Rabbis", p.193-216, T.M.Law & Alison Salvesen, Peters.

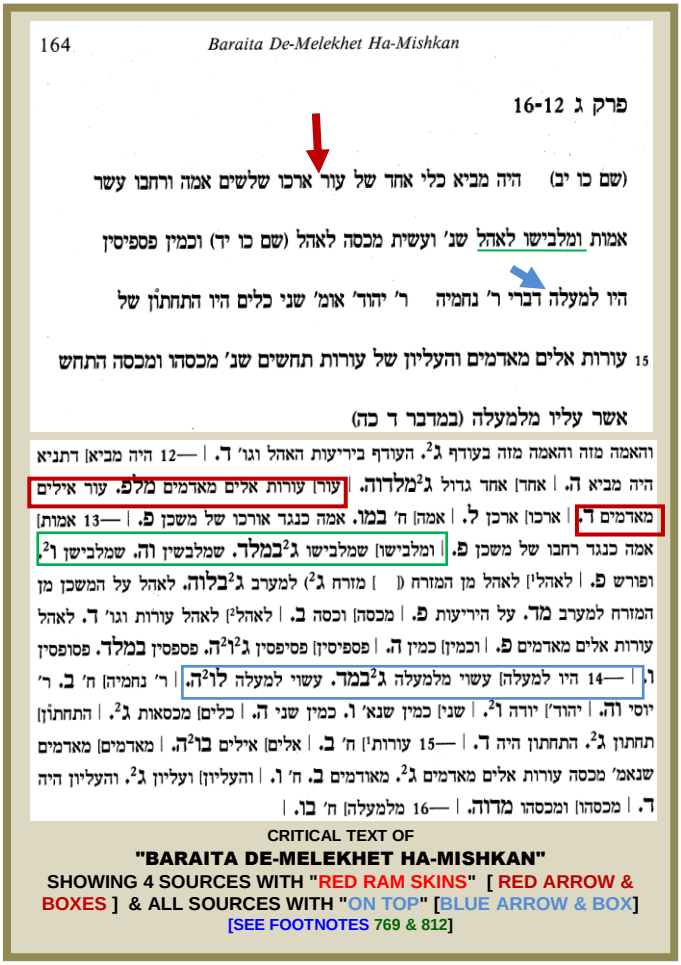
[807] See footnote 806-B p 492; on cyanos see footnote 802-B.

used for *techeles* – analogos to what Akilas did in Greek? The Aramaic term is almost the same as the Hebrew and the ancient Akkadian – the language of Akkad אַכַּד.[808] What do we learn from sosgona that we would not learn by using the same word ? The most obvious thing is to alert us that though it's about the same color, it is not from the same dye. The techeles comes from a sea creature and is very rare and expensve, while the coloring for the tachash skins—though visually identical --may come from less expensive sources – like the plant sourced dye—the residue of a tree – *kala ilan*.

It may also have additional meanings. Sosgona, as we already noted,[798] is apparently a combination of two terms: "sos" – meaning '*moth or worm*' in Aramaic and 'gauana' : which is understood to mean *'vermillion, sky-blue or blue-black*' in Old Persian[809]. From the way some of our color terms are based on or linked to a word for something that is known for the particular color,[810] it may be connected with a blue moth or butterfly that was – and perhaps still is-- found in abundance in Persia – modern day Iran.

As can be seen on the map [previous page], there are such butterflies- of family-genus *Lycaenidae-polyommatus*- including dozens in the 'sky-blue'-'blue black' range-- that are found in great numbers in the Zagros Mountains bordering Mesopotamia[811].

Put in techeles in Akkadian in cuneiform writing


164 Baraita De-Melekhet Ha-Mishkan

פרק ג 12-16

(שם כו יב) היה מביא כלי אחד של עור ארכו שלשים אמה ורחבו עשר

אמות ומלבישו לאהל שנ' ועשית מכסה לאהל (שם כו יד) וכמין פספיסין

היו למעלה דברי ר' נחמיה ר' יהוד' אומ' שני כלים היו התחתון של

15 עורות אלים מאדמים והעליון של עורות תחשים שנ' מכסהו ומכסה התחש

אשר עליו מלמעלה (במדבר ד כה)

והאמה מזה והאמה מזה בעודף ג². העודף ביריעות האהל וגו' ד. | —12 היה מביא] דתניא היה מביא ה. | אחד] אחד גדול ג²מלדוה. | עור] עורות אלים מאדמים מלפ. עור אילים מאדמים ד. | ארכו] ארכן ל. | אמה] ח' במו. אמה כנגד אורכו של משכן פ. | —13 אמות] אמה כנגד רחבו של משכן פ. | ומלבישו] שמלבישו ג²במלד. שמלבשין וה. שמלבישן ו². ופורש פ. | לאהל¹] לאהל מן המזרח (מזרח ג²) למערב ג²בלוה. לאהל על המשכן מן המזרח למערב מד. על היריעות פ. | מכסה] וכסה ב. | לאהל²] לאהל עורות וגו' ד. לאהל עורות אלים מאדמים פ. | וכמין] כמין ה. | פספיסין] פסיפסין ג²ו²ה. פספסין במלד. פסופסין ו. | —14 היו למעלה] עשוי מלמעלה ג²במד. עשוי למעלה לו²ה. | ר' נחמיה] ח' ב. ר' יוסי וה. | יהוד'] יודה ו². | שני] כמין שנא' ו. כמין שני ה. | כלים] מכסאות ג². | התחתון] תחתון ג². התחתון היה ד. | —15 עורות¹] ח' ב. | אלים] אילים בו²ה. | מאדמים] שנאמ' מכסה עורות אלים מאדמים ג². מאודמים ב. ח' ו. | והעליון] ועליון ג². והעליון היה ד. | מכסהו] ומכסהו מדוה. | —16 מלמעלה] ח' בו. |

CRITICAL TEXT OF
"BARAITA DE-MELEKHET HA-MISHKAN"
SHOWING 4 SOURCES WITH "RED RAM SKINS" [RED ARROW & BOXES] & ALL SOURCES WITH "ON TOP" [BLUE ARROW & BOX]
[SEE FOOTNOTES 769 & 812]

THE PATTERN OF THE COLORS

Curiously, the Bereisa Meleches ha-Mishkan that helped us learn what kind of animal the Tachash hides came from, [769] appears to say nothing at all about their color. In the place where we would expect such information, we find R. Yehudah and R. Nechemyah with apparently contradictory opinions on the relationship between the red dyed ram skins and the Tachash skins. R. Yehudah says there

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[808] Br 10:10, Babylonia ~4k y. ago. Written in cuneiform – with a wedge shaped stylus pressed into clay.

[809] Give source – experts contacted

[810] In Hebrew: blood-red; green-plants, yellow-gold & – as we've just seen with techeles – blue-sky . See also footnote 799 for links of color words with insects that are the source of the color.

[811] A. The upper surfaces of the wings and body of the males are often an intense blue -as can be seen in the photos above-- while the underside of the wings – which are seen when folded up- and the wings of most females are camouflage colors.

B. There are 76 species of *polyommatus* found in Iran listed in "Biological diversity of Lepidoptera in Iran - Geographic distribution of 2200 species", Hassanyar Mohammadian, 2006, 389 pages; many don't have color photos or descriptions readily available. The following may be a source of more info _____ [#2165-2231] This type of butterfly feeds wslectively on plants that grow on chalk or limestone rocks – which are a primary contstitutent of the exposed surfaces of the Zagros mountains of Western Iran, N. Iraq and S E Turkey. The Cedar Mountain Blue- Polyommatus ellisoni ellisoni -of Lebanon is extremely abundant in the cedar forest areas. Butterflies of Lebanon, T. B. Larsen 1974. They may have been far more abundant in ancient times when the lower slopes of these mountains were covered with cedar forests & weren't used for crops or grazing. See footnote 666.

C. An obvious question is: "Why can't butterfly wings themselves be used for blue pigment?" The answer is the blue color of the butterfly wings is structural [see photo, top right]– produced somewhat like the brilliant colors reflected from the microgrooves of a compact disk or the shimmering colors produced in a soap bubble. If the scales are mixed with water or oil, the wavelength would shift from blue to yellow, orange or red – & would be less attractive as a color-fast dye than other materials that can be bound chemically to the materials – like wool, fur & linen- that one might like to dye.

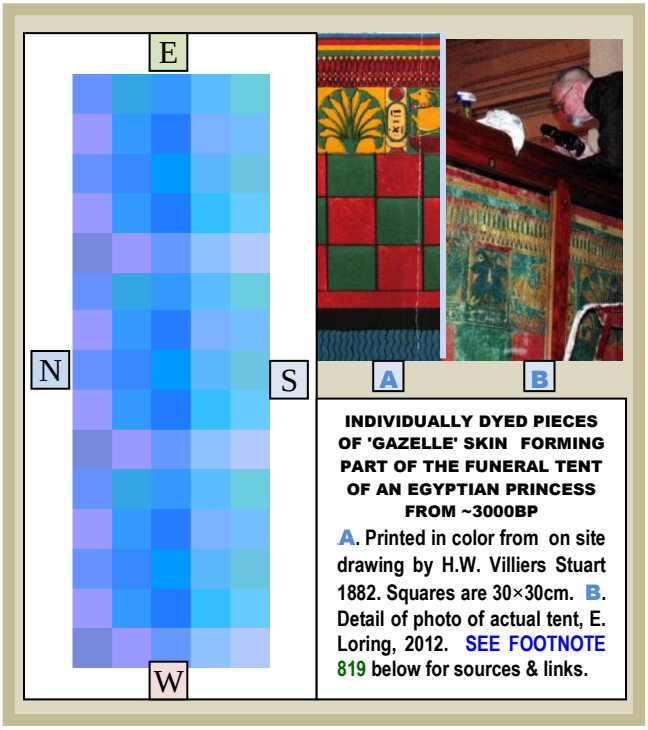
were two covers and the Tachash was on top. Just before this, R. Nechemya appears to say there was one covering made of the two types of skins and they were combined in a checkered or striped pattern.

However, as can be seen in the critical text above [previous page], at least three of our surviving ancient manuscripts - and the first printed edition - have R. Nechemyah referring to one large covering of red ram skins[812]. All of the manuscripts then say that the covering had a checkered pattern on top.

R. Nechemyah's comment comes just after the descriptions of two other parts of the covering – one above the other – where both are made of woven fibers in disconnectable pieces. The mention of one large covering of skins may reasonably be to contrast the unbreakable unity of this part with the disconnectable character of the two distinct and separable underlying layers.

The use of the expression "on top" appears to be unnecessary if it refers only to the large covering of skins – since these skins were already described as clothing or covering the Mishkan—and were thus already "on top" of whatever was underneath that they were covering. It's more reasonable that it refers to the uppermost layer of the covering – the layer of Tachash skins. It informs us that this layer was in a checkered pattern.

So, it is not necessary to understand R Nechemyah as saying that the checkered pattern is composed of a mixture of reddened rams skins and blue Tachash skins. This also means that in this case, R. Yehudah is not necessarily contradicting R. Nechemyah but is supplying additional details which fill out the picture. His statement that there were two coverings is to clarify what may have been ambiguous in R. Nechemya's statement -- which appears to say that there was only one. His statement about the Tachash informs us that the uppermost covering was Tachash – and it was that covering that had a checkered pattern.



INDIVIDUALLY DYED PIECES OF 'GAZELLE' SKIN FORMING PART OF THE FUNERAL TENT OF AN EGYPTIAN PRINCESS FROM ~3000BP

A. Printed in color from on site drawing by H.W. Villiers Stuart 1882. Squares are 30×30cm. B. Detail of photo of actual tent, E. Loring, 2012. SEE FOOTNOTE 819 below for sources & links.

The process of dyeing rams skins red may have been relatively inexpensive and uniform – producing a uniform result[813]. The process of dyeing Oryx hides blue may've produced a variable result depending a great deal on the details of the process and what the end use would be. Thus some might have been a darker blue and some a lighter blue, some a reddish blue and some greenish blue.

The dyed hides would have been received from the Egyptians when they gave us presents just before we left. Among the things they gave us were *raiment* - שִׂמְלֹת. This in-

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812 [See footnote 769 on critical text, for source of what follows here] Early sources that say "rams skins" are:

ד. the 1st extant printed edition: Venice, 1602, complete, relies primarily on ms מ but also on other ms's that are otherwise unattested in any extant source. The comment on this source at p 108 of BMM gives some idea of the types of errors that occur in a transcription.

ל. complete, made in 1675 from a copy owned by Smule b. Chaim Vital. This ms "represents a distinct branch of the textual history of BMM" "the scibes errors are quite rare " [cont. next page]

מ. complete written in 1342. Part of the oldest surviving manuscript that contains the entie Babylonian Talmud.

פ. 15th -16th century—this manuscript often includes additional explatory interpolations – like additional description of the tachash after R Nechemya's description of the ramskin covering. This more detailed description of tachash comes in the place of R.Yehudah's comment—which is not present in this manuscript.

813 If the process wasn't uniform , the red-dyed ramskins could also have been assembled in a checkered pattern –invisible except when the Mishkan was disassembled for transport.

cludes hides and is not limited to woven garments – as would be the case if the word had been *clothing – of woven cloth –* בֶּגֶד. [814]

Threads or woven cloth of techeles that had been received from the Egyptians probably also had a broad range of colors. Unlike dyed skins, the cloths could be taken apart and the threads of different shades could be blended to produce new cloth of a uniform color. Dyeing appears to be missing among the skills used to make the Mishkan in the Desert[815].

The checkered pattern of the Tachash cover also helps explain R. Yosef's interpretation of sosgona – "rejoices with its colors". The top covering of the Mishkan was all blue – but different shades --for our different approaches to God- all under the wings of Heaven.

The blue pattern [above, previous page] is intended to show how a range of colors from darker blue to lighter blue and reddish blue to greenish blue could be combined in a way that shows both a checkered and striped pattern and is also lighter on the southern side[816] and darker on the northern side. Such a general pattern may have been modified to indicate the main parts of the interior – including the separation of the inner part – the Kodesh Kadoshim – where the Aron Kodesh rested - and the outer part - where the Menorah, Golden Incense Altar and Show Bread Table stood. The actual pattern may have also included indications of the locations of each of the above mentioned Holy Kailim. It may have involved a range of colors in the east –west direction going from, for example, redder hues toward the west[817] and greener hues toward the east[818].

The individual pieces would have been the size of a square that could be cut out of the hide of a full grown Oryx – about one meter on a side. If the Biblical cubit is about half a meter, the dimensions of the cover – given as 10 by 30 cubits – would be 5 by 15 meters – requiring 75 squares of tachash hide.

That there was a practice of making a tent or tent cover out of individually dyed squares of animal hide is shown in the photos [on the previous page] to the right of the blue tachash pattern. The tent like structure from about 3,000 years ago is made in a rectangular solid form of individually dyed squares of what was originally described as gazelle hide, 30cm. on a side[819].

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814 The "rams skins dyed red עֹרֹת אֵילִם מְאָדָּמִים " came from the Egyptians with color in them [Ex 25:5;35:7 ["...they asked of the egyptians ...raiment-שְׂמָלֹת " ex 12:35]: This includes a large outer cloak-like garment - not necessarily woven. It can be made entirely or primarily of animal skin. Beged בֶּגֶד = is a garment of woven material – not animal skin. [eg. Lev 13:49 on tsora'as] The 'White' oryx hide, would be more easily dyed blue if that was the desired finished color. Non-uniform color –thus 'many-colored'. Red dye was more standard color. Tcheles & tachash.: blue; tachash had broader range: reddish-blue, violet, greenish blue. Animal skins had a range of natural colors, dyes and sizes. Egyptians used these dyed hides for cloaks, bedcovers, rugs, wall hangings, etc.

815 Here are the techniques acatually listed: [Ex 35:21-35]: spinning, weaving, carving, working in metal, jewels and wood. [Ex 38:23] חֹשֵׁב וְרֹקֵם Skillfull worker in colors' -not dyeing- but weaving, embroidery, knitting and artistic skill.

816 The general direction of the sun throughout the day and year .

817 The setting sun – over western Mediteranean Sea – is much redder than rising sun – over 1+km high mountains of Trans-Jordan.

818 The direction of the lush Jordan river valley and the genral direction associated with "Gan Eden"

819 A. From pdf p 36 of 299 in Google version at Internet Archive. This key color plate was scanned for Google without being unfolded, so only a small portion of the original is visible. _____The layout of the full tent is given on pdf p. 32. _____ Since the largest panel of the tent is described in the text [pdf p 29, last 2 lines] as 6×9ft _____ & it is 6×9 squares, ea. sq=1 ft ~30cm. "The Funeral Tent of an Egyptian Queen", Henry Windsor Villiers Stuart, London, 1882. See also "La Tente Funéraire De La Princesse..." E. Brugsch, 1889, 36p. ____ Also described in "The Funeral Tent of an Egyptian Queen" Nature, Jun. 29, 1882 , p 193-5., V. 26, # 661 _____

B. 21a Dynasty Studies: E. Loring: The Funerary Baldachin of Isetemkheb B in Ancient Egypt. London. June/July 2011, p 54 ____

C. large on-line group of photos of this object _____ CAI JE 26276 _____

From p 5, Villiers Stuart 1882 " The tent itself may be described as a mosaic of leather work, consisting of thousands of pieces of gazelle hide, stitched together with thread of colours to match. The edges are neatly bound with a pink cord of twisted leather, sewn on with stout pink thread; each colour is a separate piece, no one section bearing two colours; thus each square of the chess-board-patterned foot-stool upon which the gazelles are kneeling is a distinct morsel stitched to its neighbours. The whole work is in fact a mosaic, and is the only example yet discovered of what may be called ancient Egyptian tapestry. The colours consist of bright pink, deep golden yellow, pale primrose, bluish green, and pale blue. They are wonderfully well preserved, considering that they were laid on not long after the Trojan war, and are contemporary with Solomon !

An Eleventh Dynasty (c. 2000 BC) cloth from Deir el-Bahri in Upper Egypt, and a Twelfth Dynasty (c.1850 BC) embalming cloth from Beni Hasan both contain bromine as well as indigotin in their blue-dyed threads, and were thought therefore to have been dyed with shellfish dye. However, further analysis has revealed the dyestuff to be *indigotin*. (These samples, in the British Museum, were shown to the writer by Hero Granger-Taylor in 1992.)

Indigo in the Arab World, Jenny Balfour-Paul, 2012, note 63 , p 179
Showing use of much less expensive plant sourced blue dye in Time frame of Exodus
Get original studies from British Museum see my notes R9&10, p 45

That there was also a practice in ancient Egypt of dyeing with relatively inexpensive blue dyes has also been demonstrated. Linen fibers dyed with relatively low cost indigo blue have been found in Egypt dating back 3900 years[820]. Dying wool is easier than dying linen with the same colorant. Wool and animal hair in general – being made of protein - do not need the "mordant" step required to dye linen – made of cellulose– to make the dye molecues bind chemically to the fiber[821]. So, the process of dyeing wool and animal hides would have been discovered before the process of dying linen. However, wool was very rarely used in ancient Egypt and is more perishable.

The earliest plant sourced blue dyed wool found by archeologists in the neighborhood of Egypt is probably from the time of King David – about 3000 years ago[822]. However, in the whole world, the earliest cloth of any kind dyed with plant sourced indigo is cotton cloth, made by indigenous people of Peru – 6,000 years ago[823].

Advanced chromatographic analysis can distinguish between plant sourced indigo and dyes of nearly identical color and chemistry that come from a sea snail. The latter include bromine that is chemically bound to the dye. The plant sourced dye chemical has no bromine and can be distinguished from the snail based material even if the fiber has a substantial admixture of bromine containing sea salt. This was apparently what was used to clarify the nature of the dye in a specimen held in the British Museum – noted in the text box, upper left.

1900 BCE weave fragment from a linen shroud with indigo blue fibers at the ends of some weft yarns, Beni Hasan, Egypt. Zvi C. Koren, p 176, "Color My World" 820

THE TACHASH WAS A UNICORN?

"…the tachash was called "keresh" and had one horn" -

- ר' אבון אמר קרש היה שמה. תני רבי הושעיה דחדא קרן

JERUSALEM TALMUD, *SHABAS* 2:3
https://en.wikipedia.org/wiki/Talk:Tachash

One might think that this idea originated from the almost parallel straight horns of the oryx- seen in silhouette on distant hills- when it certainly looks like it has one horn. But close up, seen more clearly, it certainly has two – with a substantial space between them. One might also think that this is a result of seeing some oryx with one horn broken off – but the overwhelming majority have two full horns.

However, Aristotle [384–'22 BCE] writes "*oryx [ὄρυξ [omicron rho upsilon xi]] has 1 horn & cloven hooves*."[824] Over 350 years later Pliny [23-79CE] wrote "The *only animal with 1 horn and cloven hooves is oryx.*" [825] There is also, in Ancient Egypt – from the time of Avroham Avinu - a Unicorn-like hieroglyph for the oryx. [See Fig C, next p.] In contrast, hieroglyphs for most other kosher hoofed animals show two horns[826].

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820 Zvi C. Koren, zvi@shenkar.ac.il "Color My World A Personal Scientific Odyssey into The Art of Ancient Dyes"155-189 (2006). in A. Stephens & R. Walden (editors), *For the Sake of Humanity: Essays in Honour of Clemens Nathan.*Martinus Nijhoff - Brill Academic Publishers, Leiden, Neth. _____ [see photo, above right]

821 "Modern Chemistry of the Ancient Chemical Processing of Organic Dyes and Pigments" Zvi C. Koren,2015, The Edelstein Center for the Analysis of Ancient Artifacts, In Rasmussen S.C. (Ed.), *Chemical Technology in Antiquity*, ACS Symposium Series Vol. 1211, American Chemical Soc.: Wash., DC, Ch. 7, pp. 197–217.

822 "Early evidence (late 2nd millennium BCE) of plant-based dyeing of textiles from Timna, Israel" Naama Sukenik, David Iluz, Zohar Amar, Alexander Varvak, Vanessa Workman, Orit Shamir, Erez Ben-Yosef PLoS ONE 12(6): e0179014. https://doi.org/10.1371/journal.pone.0179014

823 A."Early pre-Hispanic use of indigo blue in Peru" Jeffrey C. Splitstoser, jcs@ancientamerica.net Tom D. Dillehay,Jan Wouters, Ana Claro Sci. Adv. 2016; 2 : e1501623 14 September 2016 _____ B. See in this sefer: **"FROM THE DUST OF THE EARTH … AND TO DUST YOU SHALL RETURN"** on resolving some of the apparent contradictions in the dates.

824 "History of Animals", Book 2, Part 1, P. 499b, Line 20, Loeb Class. Lib. 1965 https://www.loebclassics.com/view/aristotle-history_animals/1965/pb_LCL437.89.xml?mainRsKey=4wXuLZ&result=1&rskey=4YdhkX

825 "Natural History", Book. XI, P. 592-3, Par. CVI; R.F & 1940, https://archive.org/download/plinynaturalhist005560mbp/plinynaturalhist005560mbp.pdf

826 www.ancient-egypt.co.uk/transliteration/ancient_egypt_dictionary.pdf . Some hieroglyphs for oryx clearly show two horns: *MA-HD* "The Oryx Nome: An Egyptian Cultural Landscape of the Middle Kingdom" Carl Graves, PhD thesis, Univ of Birmingham . Jan. 2017, 362 p https://etheses.bham.ac.uk/id/eprint/7843/1/Graves17PhD.pdf

How can we explain this? The hieroglyphs can be explained from the appearance of the oryx in the wild – where it was most often seen- on distant hills. The references in Aristotle and Pliny may have been the result of an unsual gift received by Arstiotle's student, Alexander the Great.[356 – 323 BCE][827].

What kind of gift? In 1912, the Times [of London] reported that the King of Nepal had given a special present to the King of England: a small flock of unicorn sheep, The sheep – with one full size horn in the center of their forehead – were on display for public viewing in the London Zoo.[828]

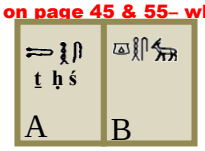
The experts in London sent to Nepal to find out more about these sheep: – Were they a special breed or were they somehow "man-made"? They found the latter. They were made by cutting off opposing surfaces of a sheep's two horns when the horns were still young, applying some special substances to the exposed inner surfaces and then binding the two horns together under pressure. The roots of the two horns then migrated toward the center of the sheep's forehead and fused as they grew.

Closer to Alexander in both time and space are two reports from four centuries before this: In Zaila, Ethiopia, on the Red Sea coast, Ludovico Di Varthema saw red cows, each with a back curving horn in the center of its forehead. In Mecca [5/18/1503] he saw two unicorn 'elk' that were gifts to the Sultan of Mecca from the Ethiopian King.[829]

WILD WHITE ORYX IN EGYPT BEFORE THE EXODUS
A SMALL PART OF
Hunting scene in the tomb of Antefoquer (1958–1913 BC) in Thebes
From: *"Bos primigenius* in Ancient Egyptian art – historical evidence for the continuity of occurrence and ecology of an extinct key species"
Carl Beierkuhnlein, Frontiers of Biogeography, 7(3), 2015
http://escholarship.org/uc/item/2cc003

So, Alexander the Great may have received a similar gift of a unicorn oryx when he was in the area of Egypt[830] and Ethiopia and sent a report of this to his teacher, Aristotle. Aristotle recorded it in his book and Pliny, seeing no other such reports from the intervening centuries, wrote that it is the only animal with cloven hooves and a single horn.

[The material below is a work in progress taken from notes on page 45 & 55– which also has links and some graphics.]



ETYMOLOGY

According to Akilas תְּאוֹ, as found in Is. 51:20, [where it's spelled תוֹא[831-A.1]]means oryx[831-A.2-B].

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827 That a unicorn would have special appeal and significance to Alexander, is suggested by a story related by Greek scholar, Plutarch [46 to 119+CE, Greece] of a find of a natural unicorn on a farm of Pericles [495 – 429 BCE, Greek leader of Athens]– and its suggestion that Pericles would become the single ruler of his country.

> "There is a story, that once Pericles had brought to him from a country farm of his a ram's head with one horn, and that Lampon, the diviner, upon seeing the horn grow strong and solid out of the midst of the forehead, gave it as his judgment, that, there being at that time two potent factions, parties, or interests in the city, the one of Thucydides and the other of Pericles, the government would come about to that one of them in whose ground or estate this token or indication of fate had shown itself."
> http://classics.mit.edu/Plutarch/pericles.1b.txt

For a story of a naturally occurring unicorn sheep, See: *'Unicorn found in Iceland':,4/24/17,*

828 "Royal Animals From Nepal".1/15,p.8; &16/12/p.12 *Times*, London, 1912 [GET WORKING LINK] discussed at length in: "Marvels Of The Animal World", W. S. Berridge, 1922, p47-49; [illegible] Creating multiple & unusually shaped horns in domestic cattle among traditional peoples of sourthern Africa is described in some detail , p 185-7" Travels into the Interior, Parts of Africa by the Way of the Cape of Good Hope; in the Years 1780, 81 , 82, 83, 84, and 85." Translated from the French of M. Le Vaillant. 2nd Ed. Vol.II.1796,"The Physiology of Horn Growth: A Study of the Morphogenesis, The Interaction of Tissues, and the Evolutionary Processes of A Mendelian Recessive Character By Means of Trans-plantation of Tissues, W. Franklin Dove, *Biologist, Experiment Station, University of Maine*

829 "The Travels of Ludovico Di Varthema"1503-8, translated from original Italian, 1510 ed, to English for Hakluyt,1863, ed.,[pdf p250,211-2]. "Ludovico De Varthema and His Unicorns in Mecca" Willem Pieter Gerritsen, p3-13 in "O ye Gentlemen: Arabic Studies on Science and Literary Culture; A Vrolijk & J.P. Hogendijk, Eds. Brill . [see also on p 55 of this sefer at 7.a. אופיר]

830 Oryx expert, M.R.S.Price: mark.stanleyprice@zoo.ox.ac.uk thought that the ancient Egyptians made such unicorn oryx -- probably from Oryx Leucoryx – the white oryx that lived east of Nile. email 4/4/'16. He is the author of "Animal Reintro's: The Arabian Oryx" Cambridge University Press. 1989.

831 A.1 The 2nd spelling is said to be in the "construct state"["Hebrew & Aramaic Lexicon of the Old Testament" Koehler & Baumgartner, 2001, Brill" A.2 "An Index to Aquila" by Joseph Reider and Nigel Turner, 1966, Brill, Supplements to Vetus Testamentum, Vol 12. [NLI shelf # ט: 96 series 1 1966 #12] p 317, 117, Is 51:20. Aquila & Theodotion translated this word from the Hebrew to Greek as oryx this sentence. Rahlfs # 86 in part II, 9th/10th cent.; XII, Is., Jer., Cat. in Ez; Vatican Library, Barber. gr. 549;Vat. City has 584+ p, & 287+ leaves https://digi.vatlib.it/view/MSS_Barb.gr.549 Table of contents is on ms p.3r. It shows Isaiah on p 97[~1/3 up from the bottom]; The note on Akilas is on p 97r, 10 lines from the top, in the right margin. B. Aquila is Akilas the Tanna. Symmachus was a Jew from time of R. Meir. He made a translation into Greek that is said to be in a more elegant, idiomatic Greek style than that of Akilas. There is some question of whether he was the Tanna of the same,

There's another group of words with the same sequence of letters תְּאוּ [Bam. 34:7 & 8] translated as "ye shall draw a line".[832-A]

בָּנִיךְ עֵלְפוּ שָׁכְבוּ בְּרֹאשׁ כָּל־חוּצוֹת כְּתוֹא מִכְמָר הַמְלֵאִים חֲמַת־יְהוָה גַּעֲרַת אֱלֹהָיִךְ׃

"…like an [oryx]in a net…" [832-B]

The Hebrew for 'hasten" is : חוּשׁ:

וַיִּקְרָא יְהוֹנָתָן אַחֲרֵי הַנַּעַר מְהָרָה חוּשָׁה אַל־תַּעֲמֹד וַיְלַקֵּט נַעַר יְהוֹנָתָן אֶת־הַחִצִּי וַיָּבֹא אֶל־אֲדֹנָיו׃

"And Jonathan called after the lad, "Hurry, make haste, stay not."…. 1 Sam 20:38

וְקַלּוּ מִנְּמֵרִים סוּסָיו וְחַדּוּ מִזְאֵבֵי עֶרֶב וּפָשׁוּ פָּרָשָׁיו וּפָרָשָׁיו מֵרָחוֹק יָבֹאוּ יָעֻפוּ כְּנֶשֶׁר חָשׁ לֶאֱכוֹל׃ Hab 1:8

"…they shall fly as the eagle *that* hasteth to eat."

אִם־הָלְכָתִי עִם־שָׁוְא וַתַּחַשׁ עַל־מִרְמָה רַגְלִי׃ Job 31:5

"If …my foot hath hasted to deceit;"

with prefix ת ='she hastens'. This is suggested by Rabbi S. R. Hirsch[833-A] : citing Job 31:5 to say that "the name [tachash] תַּחַשׁ might indicate that it was a animal characterized by special speed" [833-B]

Gesenius' Hebrew-Chaldee Lexicon: תְּאוֹ [from תָּאָה:to mark out? Maybe it means "make a straight line." The horns of the oryx are very distinct in that they're long, straight and relatively parallel.

וְזֶה־יִהְיֶה לָכֶם גְּבוּל צָפוֹן מִן־הַיָּם הַגָּדֹל תְּתָאוּ לָכֶם הֹר הָהָר׃

related to Arabic "to outrun"—type of gazelle, for speed – the oryx [20].

Oryx in Egyptian: ma-hedj; gazelle –with unicorn-like hieroglyph: ghs and phonetic hieroglyph last 2 of 3 symbols match last 2 of 3 characters.

See Etymolgical Dictionary of Egyptian by Gabor Takacs, 3 volumes, 1999- 2008. Vol 3, 2008 has multiple hits on Oryx. volumes 1 & 2 aren't available as ebooks, but are in the NLI reading room at PJ 1351. T35

In word for stretching/curing leather: tuhs or ṯḥś. & see footnote 302-b r.n.

Word for speed: chush –from word for gazelle?– byword for speed; gazelle – in Egyptian: ghs –from sound for speed? – like English "Whoosh". G & w are close in word that links English: War and French: Guerre. Fricative g & w front & back of mouth. Double or triple entendre [blue oryx hide]? E.g.: sosgona[834]

DIMENSIONS OF THE MIZBEACH HA NECHOSHES: COPPER ALTAR- & 'SOMECH AL HA-NES' – RELIANCE ON MIRACLES

THIS IS A WORK IN PROGRESS

1. Zevachim, 59:-60] R. Yehuda b. Illai says that if the Mizbeach HaNechoshes [the copper altar described in Exodus] is only 5X5 amos -- as the Torah appears to say [Ex: 27:1, 38:1] -- then, after deducting 1 ama for each of the 2 horns and 1 ama for each of the 2 opposite sides of the path for the cohen to walk around the fire, we're left with a fire only 1x1 ama - too small b'derech ha-teva [the way of nature] to consume all the day's carbonos [burnt offerings]. But, there's an 'extra word' 'revua-רְבוּעַ' [square] and in the Nevua [prophecy] of Yechezkel there is also an 'extra word' 'רָבוּעַ' in the description of the mizbeach in the future Temple [Ez:43:16]. The dimensions of that future mizbeach are understood to be from center to edge and not edge to edge. Therefore, when the Torah says 5x5, it really means 10x10.

R. Yose b. Halafta understands that the space of 1x1 ama is not too small. As explained by Rashi,[? Give quote] he holds that the fire comes down from Heaven every day and is not limited by derech ha-teva. However, R. Yose says that the extra word "square" is important. He says there is also an extra word "square" in the description of the Mizbeach HaZahav -- the Golden Altar for incense. The Torah says that it is 1x1 Ama -- square -- and 2 amos high. [Ex: 30:2, 37:25] Therefore, R. Yose says, we can understand that the Mizbeach Ha Nechoshes is 5X5 amos -- and ten amos high.

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relatively rare, name – who knew Greek, lived in the same time & place, was a student of R. Meir & later a member of the academy of R. Yehuda b. Ilai. The most recent scholaship shows they were very likely the same person. "Symmachus, The Septuagint and the Sages: An Examination of the references to Sumkhos ben Joseph in the Mishnah, Tosefta and Talmudim" Ch 18, p 336-55 in "Septuagint, Sages and Scripture", 2016, Brill. [nli# JRR ט 521.76 or ט 96 series 2,v. #172, VTS. OUP, '21, Ch 32 "Symmachus", Michael N. van der Meer m.n.van.der.meer@iclon.leidenuniv.nl Also see "Symmachus: A Greek Targum" https://tspace.library.utoronto.ca/bitstream/1807/93397/3/Livingstone_Matthew_201811_ThM_thesis.pdf Matthew Livingstone, MA thesis,U.Toronto,'18, 87p. Why was Sumchos not praised with a possuk forever like Akilas -- or at least acknowledged by Chazal for his work? Akilas wrote under R. Eleizer b. Hyrkenos, R Yehoshua b. Chananya & R. Akiva & continued working with them for yrs. Sumchos may've written his after R. Meir, was effectively exiled or died [see Kiddushin 52b[4-Schot.];JT Kilayim 9.3 [81b[2, notes 13-24-Schot]; Avod. Zar.18b[1Schot].

832 -A as transl by S.R. Hirsch [original transl. is in German then transl. from Germ. to Engl] who says root is apparently תאה [incl. Bam 34:10- וְהִתְאִוִיתֶם] However , there are no other words in Tenach with this root. The Aramaic has the idea of "to aim". It may be here that the root is the same as תְּאוֹ = oryx, with its remarkably parallel, long thin pointed horns is a byword for making a straight starting with the last letter:ת , from the 1st letter: א, & hooking them together with a ו – which means hook. How did the oryx get its name? It is a type of horned cattle – that would account for the Aleph א—which was a pictogram of horned cattle. As can be seen at right, the oryx has a notable large black mark & other dark features on its largely white face – that, with its horns, resembles a + & letter ת was a mark – like a +. Perhaps the last letter: ו , was a reminder of its long straight horns. Image is cropped from large photo at: https://www.monacoconservationencyclopedia.com/oryx-leucoryx/?lang=en

B. Caught by net, not arrows, allow kosher slaughter & undamaged hide?

833 A. [Ex 26:14] p.481, The Pentateuch, Translation and Commentary by Samson Raphael, Hirsch- rendered into English by Isaac Levi, 2nd edit., 1971, chaya:[=gazelle, byword for speed; large gazelle = oryx] B. "Among North American mammals, pronghorns are the most fleet footed. The top speed at which they can run probably does not exceed 70 km (43 mi.) an hour, and certainly it varies with individuals. Most impressive is their endurance; they can run at speeds of 65 km (40 mi.) per hour for about 10 km (6 mi.)"40-60kg Mammals of Texas Online Edition https://www.biodiversitylibrary.org/item/mammals-of-texas-online-edition/42#page/8/mode/1up "The relation between maximal running speed and body mass in terrestrial mammals" Theodore Garland, Jr. J. Zool., Lond. (1983) 199, 157-70. This study, with 363 ciations in Google Scholar [Aug 4/21] cites several sources with 4 different values for the speed of the pronghorn – ranging from 65-113kph and uses 100kph in its analysis. It is the fastest land animal – other than the cheetah, is very similar to the oryx leucoryx in build and slightly lighter in weight. In the same study, horse has a value of 70kph. It should be noted that the name oryx applies to a range of species with average wts going from 300kg for male gemsbok, 250kg for oryx beisa to oryx leuk 70kg – all with long streight horns http://www.ultimateungulate.com/Artiodactyla/Oryx_leucoryx.html However, the only one in the vacinity of Israel & upper Egypt is oryx leuc. The scimitar oryx has long curved horns – like a scimitar

834 From original table of sizes on p 45; Part of it may no longer be needed : [14] Fr.Paul Peeters [pdf p53 par 2 #3 'epiphanius on the twelve stones', R. Blake, '34, ܫܡܫܝܚܐ r.v. [harv. Prof P.O.Skjaervo, emails 6/29-30/'16 skjaervo@fas.harvard.edu] [15] pdf p 392 of 635 'Compendious Syriac Dict…' j. Payne Smith, Ox., '03 r.w. [16] j. Tal. 2:3; see also Chulin, b. Tal. 59: rav yehudah:keresh =giant gazelle. [20] renowned non-jew. Hebraist r.z; [21]lexicon of נתן בן יחיאל מרומי; 1035 – 1106

R. Yehuda says this wouldn't be acceptable as it would mean the cohen on top of the Mizbeach would be completely above the curtains surrounding the courtyard of the Mishkan. These curtains -- as the Torah appears to say [Ex: 27:18, 38:18] and R. Yehuda understands -- were only 5 amos high.[835] R. Yose learns from the linkage of the curtains to the combination of the tabernacle and the copper altar [Bam: 3:26 [836-A]] that the curtains were not 5 amos high -- but 5 amos "higher" than the Mishkan building and the Mizbeach Ha Nechoshes. He also learns that the 15 amos of the shoulders of the curtains around the courtyard [Ex. 27:14,15; 38:14,15] applies not to their length only, as it is usually understood, but to their height – or both their length and height .

R. Yose [or the Tanna Kama?] sees that R. Yehuda's method of deriving better understanding is no good as R. Yehuda is learning from "karka" -something that is fixed to the ground -- the mizbeach in the Nevua of Yechezkel-- to metaltalin- something that is movable -- the Mizbeach Ha Nechoshes -- and R. Yose understands that learning from karka to metaltalin is no good.

R. Yehuda [or the Tanna Kama?] says R. Yose's method of learning isn't good because he is making an analogy from something - the golden altar- that is inside the Ohel – [the Mishkan building] -- to something – the copper altar- that is outside. This is how it is left in Zevachim [Is it R Yose and R. Yehuda who reject each other's reasoning here or is it the Tana Kama?]

When R. Yehuda refers to the altar of Solomon as the "copper altar" -- even tho' it was not made of copper , this is consistent with usage in Tanach:

וַיַּעַשׂ מִזְבַּח נְחֹשֶׁת עֶשְׂרִים אַמָּה אָרְכּוֹ וְעֶשְׂרִים אַמָּה רָחְבּוֹ וְעֶשֶׂר אַמּוֹת קוֹמָתוֹ׃

"Moreover he made an altar of copper, twenty cubits the length thereof…"[II Chron 4:1][837]

[835] In Ch. 5 of Baraita De-Melekhet Ha Mishkan , which explicitly discusses the height of the curtains, saying they were 5 amos – citing Ex:38:18. -there is no alternative view presented – tho R. Yose discuses the width of the courtyard in same chapter [line 8 p 31 in Sefer Bereisos of R. Chaim Kaniefsky, pub. Bnei Braq, תשע"ז ; & line 27 in BMM crit .text & p231, line 14 in English translation]. Further, Rashi, & Ibn Ezra comment on Ex. 27:18 , that the height of the curtains was 5 amos.

אֹרֶךְ הֶחָצֵר מֵאָה בָאַמָּה וְרֹחַב חֲמִשִּׁים בַּחֲמִשִּׁים וְקוֹמָה חָמֵשׁ אַמּוֹת שֵׁשׁ מָשְׁזָר וַאֲדָנֵיהֶם נְחֹשֶׁת׃

The length of the court shall be an hundred cubits, and the breadth fifty every where, and the height five cubits of fine twined linen, and their sockets of copper.

[836 A] "the hangings of the court, the screen for the door of the court which is around the tabernacle and the altar, and its cords; all the service pertaining to these. וְקַלְעֵי הֶחָצֵר וְאֶת־מָסַךְ פֶּתַח הֶחָצֵר אֲשֶׁר עַל־הַמִּשְׁכָּן וְעַל־הַמִּזְבֵּחַ סָבִיב וְאֶת מֵיתָרֵיו לְכֹל עֲבֹדָתוֹ׃"

[836 B] R. Yose b. Halafta also understands that the multicolored curtains of the Ohel and the Paroches also contained gold thread – like the multicolored garments of the cohen gadol. [Bereisa d'Mesechet Midos, 11, see also Bereis d'Melechet Ha Mishkan 4:3] based on Ex. 39:3 and the expression: מַעֲשֵׂה חֹשֵׁב. According to R. Yose , wherever this expression is connected with cloth it implies the same colors and gold thread. This is understood to be a "das Yachid": the opinion of one Tanna – and not the generally held view.[see footnote 581]

וַיִּרְקְעוּ אֶת־פַּחֵי הַזָּהָב וְקִצֵּץ פְּתִילִם לַעֲשׂוֹת בְּתוֹךְ הַתְּכֵלֶת וּבְתוֹךְ הָאַרְגָּמָן וּבְתוֹךְ תּוֹלַעַת הַשָּׁנִי וּבְתוֹךְ הַשֵּׁשׁ מַעֲשֵׂה חֹשֵׁב׃

And they did beat the gold into thin plates, and cut it into threads, to work it in the blue, and in the purple, and in the scarlet, and in the fine linen, the work of the skillful workman.

[837] [cited in Zev. 60a[1], Schott., note 8, citing Rashi]

and with the reality that the instruments for working the fire on this altar and in the 2nd Temple were made of copper just with the original copper altar.[1 Kings 7:45]

Toward the end of the masechta [Zev. 118:] -- the part just discussed is about exactly in the middle -- we learn that the Mizbeach Ha Nechoshes was seen and used in Shiloh-שִׁלֹה alone for a period of 369 years. It should be clear if the curtains around the Chatzer [courtyard] were 5 amos high -- permitting the 10 amos high Ohel of the Mishkan to be seen from outside the courtyard -- or 15 amos high -- which would obscure it -- except when viewed from a higher and nearby location.

Since the Jews who came to Shiloh on the festivals were supposed to be able to see the roof of the Mishkan while eating their festive meals -- if they were able to see the roof, -- from a nearby hill for example -- they would also be able to see the top of the Mizbeach Ha Nechoshes and the cohen standing on top of it. With the dimensions given by R. Yehuda, they would be able to see the roof of the Mishkan from level ground -- while the lower 2 amos of the cohen [or 3 -- if the horns are not included in the height] would be concealed by the curtains.

During the 4 decades of the Mizbeach in the Midbar -in the time of Moshe -- the *anonay ha covod* [clouds of glory] -- leveled the hills [838]-- so the camp was relatively flat -- and Mishkan building would never be seen during festive meals if - according to R. Yose- the curtains were 15 amos high.

What is not said anywhere in Zevachim is why R. Yose wants to understand that the Mizbeach Ha Nechoshes was 10 amos tall -- though we understand clearly why R. Yehuda wants it to be 10X10-- because he does not want to see it as relying on a nes - miracle -- which would be required if the fire were only 1x1 ama. In contrast, R. Yose is actively "Somech Al Ha Nes" "relying on a miracle" -- as understood by Rashi [?]-- with the fire coming from Heaven every day.

The omission of R. Yose's reason becomes more of an issue when we learn his reason in Bereisa d'Meleches Ha Mishkan. There, in Chapter 11.2, we not only learn R. Yose's reason for wanting to understand that it was taller, but why precisely 10 amos high. But in this same place, before we learn anything more from R. Yose, we learn that there is a third Tanna -a colleague of both R. Yehuda and R. Yose: R. Meir. All were students of Rabbi Akiva at the same time and place.

R. Meir is the first to speak here and R. Yehuda isn't mentioned in this discussion. R. Meir says that the Mizbeach Ha Nechoshes was 5X5 amos and 3 amos tall -- just as it appears to say in the Torah. Then R. Yose goes through the same reasoning he has in Zevachim interacting to the questions of R. Meir in the same way he interacted with the questions of R. Yehuda in Zevachim.

The language in Zevachim suggests the conversation between R. Yehuda and R. Yose may not have actually taken place and is constructed in Zevachim to show something that would not otherwise be apparent. The

[838] Jeffrey L. Rubenstein, "Tannaitic Midrashim: The Clouds of Glory" p.239-71 in "A History of Sukkot in the Second Temple and Rabbinic Periods", Brown Judaic Studies https://www.jstor.org/stable/j.ctvzpv502.12

language of of R. Yose may have been taken from the Bereisa d'Meleches Ha Mishkan. The questions of R. Yehuda may have been taken from the same place – substituting R. Yehuda for R. Meir. [The statement of R. Yehuda that it was 10x10 and not 5x5 may have been taken from Sifra/Toras Kohanim – the halakhik midrash on Vayikra where R. Yehuda is understood to have been the source of anonymous statements [– speculative – not yet checked out – see Louis Finklestein Sifra Translation and commentary in English, 5 vols.]

THE GRILLWORK, NETTING & OR GRATING AROUND THE ALTAR

After this, R. Yose or an unnamed tanna, gives more detail of the Mizbeach ha Nechoshes including the sovaiv & "red line" which are found in the 1st & 2nd Temples but not explicit in the Mishkan and would be unnecessary or otherwise inappropriate if the Mizbeach ha Nech. were only 3 amos tall. "Red line" is in place of:

וְעָשִׂיתָ לּוֹ מִכְבָּר מַעֲשֵׂה רֶשֶׁת נְחֹשֶׁת וְעָשִׂיתָ עַל־הָרֶשֶׁת אַרְבַּע טַבָּעֹת נְחֹשֶׁת עַל אַרְבַּע קְצוֹתָיו׃

"And thou shalt make for it a grating of network of copper; and upon the net shalt thou make four copper rings in the four corners thereof." EX. 27:4

Rashi understands the word מִכְבָּר to be related to the word for sieve כְּבָרָה in Amos 9:9- full of holes.

מִכְבָּר : κοσκίνωμα [koskinoma] a grating Symmachus[831-B] & Theodotion on Ex. 35:16 [

אֵת מִזְבַּח הָעֹלָה וְאֵת־מִכְבַּר הַנְּחֹשֶׁת אֲשֶׁר־לוֹ אֶת־בַּדָּיו וְאֶת־כָּל־כֵּלָיו "…with its grating of copper…" אֶת־הַכִּיֹּר וְאֶת־כַּנּוֹ׃

οι λ'[=the remainder – which may include Akilas]

כְּבָרָה׃ κόσκινον[koskinon] α' σ' [=Akilas & Symmachus] p139 "An Index of Aquila"

See Zev 53a[3] Schott. ~ 9th line from bottom " from where is this matter derived" notes 27-28

My understanding is, this was a way to draw air into the base of the altar so that it would go through the properly arranged filler stones [larger stones below, topped with progessively smaller stones toward the top surface – so that the top is flat but lets air through] and provide a vertical updraft from the center of the fire. With this, the flames would have a stronger tendency to go up and be less blown about by the wind—if any. Maybe the copper grating covered the top also? The grating has large holes; the network is a finer screen supported by it.

Rashi quotes Zevachim at length here including:

> "…the ledge of the altar: Heb. כַּרְכֹּב, a surrounding ledge. Anything that encircles anything else is called כַּרְכֹּב, as we learned in …(Chul. 25a, Schot. 25a[3] note 33 "decorative grooves that encircle an object"): …For the altar as well, he [Bezalel] made a groove around it a cubit wide. [The groove was] on its wall for decoration …. [. ולבוש המכבר תחתיו] and the "garment" of the grating was below it . [This could mean underneath it -- as underwear is under outer garments – rather than vertically below it A.S.A.] The one who answered [i.e., one of the Sages of the Gemara] replied: "There were two [ledges], one for beauty and one so that the kohanim should not slip." The one on the wall was for decoration, and below it, they adorned [it with] the grating, whose width extended halfway up the altar. Thus, the grating was a cubit wide, and this was the sign of the middle of its [the altar's] height…"

This is not a contradiction to the idea that this combination of grillwork, netting and grating were intended to facilitate air flowing into the altar from the sides and up thru the middle. The front end of most gasoline fueled cars combines airflow facilitation with decoration.[839-A]

This section ends with a statement that the Mizbeach for Olas -- which means the Mizbeach Ha Nechoshes in the Desert and Shiloh and the large Mizbeach in the 1st & 2nd Temples -- was ten amos high in the Mishkan, 10 in the Bayit Rishon [Solomon's Temple], 10 amos in the 2nd Temple and it will be 10 amos high in the 3rd Temple [speedily in our days.] It is not clear if these statements are a continuation of R. Yose's words or are the words of an unnamed tanna.

Does this mean that R. Meir is also "Somech al ha nes " in this case? -- like R. Yose? R. Yose needs a path for the cohen to walk around the fire on top because he wants to understand Mizbeach Ha Nechoshes was 10 amos tall -- but if it were only 3 amos tall, would it be necessary to have a path for the cohen to walk around the fire on the top? Does R. Yehuda believe that if the Mizbeach Ha Nechoshes were only 5x5 & 3 amos tall there would still be a need for the cohen to walk around the fire on the top? Maybe with such dimensions, the cohen would not need to walk around the fire on the top -- as he could reach the center of the Mizbeach with his outstretched arm or with his arm plus one of its special utensils -- all of them made of nechoshes [Ex. 27:3-4].

There is at least a hint that it may not have been necessary -- an "extra word" in Tzav [Lev. 8:15] and Achre Mos [Lev. 16:18]. In the first, Moshe Rabeinu, in the dedication of the Mizbeach Ha-Nechoshes, puts the blood on the horns "soviv – סָבִיב" [around]. In the second, Aaron ha Cohen puts the blood on the Mizbeach Ha Zahav "soviv". In the latter case, the Chochamim [Sages of the Talmud] learn that he walked around it -- though R. Yishmael learned that he stood in one place when he did it.[839-B] So, maybe Moshe Rabeinu walked around the Mizbeach Ha Nechoshes-- on the ground. [Only 2 verses with 3 words: סָבִיב , horns & altar [both also 'finger'&'blood']. Searched [[H5439=סָבִיב] +Altar +horns] Strong's BLB]. This is probably the origin of the Sovaiv in the Temple and some understandings of the Mizbeach Ha Nechoshes -- if it were 10 amos tall [give details and sources].

However, if R.Meir understood there was no avoda [ritual service]requiring the cohen to walk around the fire on the top -- if Mizb. Ha Nech. were only 5x5x3 -& the fire was only 3 amos above the ground -- then the fire could be 3x3=9sq amos or even[5x5]-4x[1x1]=21sq. amos.

It is not necessary to learn from the Golden Altar that Moshe walked around the Mizbeach Ha'Ne-choshes when he put the blood on the horns. If it is only 3 amos tall - not 10- the floor or ground would be 3 amos below the level of the fire -- just as the sovev -- a one cubit wide terrace that went around the main Altar -- was in the 2nd Temple . It was from this sovev that the blood

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[839] A. section above, starting at "My understding" modified in response to comment by my friend Uri Veler on 7/27/21 in National Library of Israel. B. Sifra, Achrei Mos Ch. 4 at Vay. 16:18: R. Yehudah says in name of R.Elazar: He stands on his place & sprinkles.& on all (corners) he applies (blood) from bottom to top, except in the one before which he is standing, where he applies it from top to bottom. 11) "roundabout": R. Yishmael says: "roundabout" is written here, & "roundabout" is written elsewhere (viz. Shemoth 1:5). Just as here …4 distinct applications (1/ corner), so, there, … 4 distinct applications.

was put on the horns in the 2nd Temple. If the blood could be put on the horns from the ground, no space would be needed for the cohen to walk around the fire on the top either to put the blood on the horns or for other services that could be done conveniently from the area on the ground around the altar. If it were only 5x5 amos, the center of the altar could be easily reached by someone standing on the ground and using the various handheld utensils that were designed for servicing the sacrifices. It may be then that R. Yehuda did not really understand that the Mizbeach was 10 by 10 but only posited that as a way to show that the fire actually was much bigger than the 1x1 fire in the version of R. Yose-- without first arguing that there was no need for a path to walk around the fire on the top.

There is also Bereisa D'Mesechet Midos - which is about the dimensions of the Mishkan. It has the Mizb. Ha-Nech. as 5x5 amos [p82, line 2, Edit. of R. Chaim Kaniefsky] Its height is 3 amos and the length of the ramp- כבש as 10 amos, [line 4, p. 82] . Midr. Tanchumah, Terumah 10: Altar 5x5x3 [for luchos & Moshe Aharon & Miriam] in 'Legends of The Jews' -'The Symbolic Significance of The Tabernacle'. Also see footnote 123-B.8

This suggests that the piece in Zevachim is not primarily about the dimensions of the Mizb. Ha Nech. -- but about the contrasting outlooks of two Tannaim: R. Yehuda, who avoids "Somech al Ha Nes" -- and R. Yose, who relies on it and introduces it to achieve a match up – in this case in terms of the height. This may be to teach us that when we see the views of either of these two in other places we should understand their distinctive perspectives and that in Zevachim, each goes out of his way to affirm his perspective and to reject the perspective of his fellow. But we have learned from the "Gold: Pure Gold" [see page 222] issue in the Mishkan and Bigde Kahuna -- that R. Yehuda bar Illai appears to go with the Torah -- though the Rambam appears to go with R. Yose, at least on the height [give sources-- Who agrees with R. Yehuda ?]

We have also seen that by applying the Derech HaTeva thinking of R. Yehuda and the evidence of the Gold -- we were able to discover-- to uncover-- the nature of the cover of the Mishkan -- the Orot Tachashim [see page 195:.עֹרֹת תְּחָשִׁים WHAT WERE THE "TACHASH SKINS"]

If the courtyard curtains were 15 amos tall – as stated by R. Yose – not 5 in the plain meaning – would Moshe have had to be 15 amos tall to set them up !

SOME OTHER POINTS IN THIS CONNECTION

Walking around 3 cubit tall Cu altar on the ground is suggested by surround/sovev סובב :Zev.53a & Mes.Mid. Ch3m1. No סובב in Mishkan Cu altar.

In Bereisa D'Mesechet Midos, the largest bars in the kerashim – going from end - E-W direction – as 30 amos –[84, line 1&2] not going around corners as found in [Shem. 26:28, Shabbat 98b].

Line 8 appears to say that the bars that went through the kerashim were invisible both from within and without. This would mean that either the kerashim were solid or that the bars passed through some kind of tube that concealed them from view. If the Bereisa goes out of its way to mention that the bars were invisible, it suggests that if the innermost colored curtains that covered the kerashim were also invisible from inside and out, this would also be mentioned. That such a thing is not mentioned suggests that they were, in fact, visible – supporting the idea that the kerashim were frameworks and not solid or hollow pillars [discussed on p. 56, supra this sefer]. It could also be that the krashim are assumed to be solid or hollow panels and that the colored curtains are obviously invisble – but why should we assume that the bars were not placed through these structures and would therefor not be visible?

§ 7 ז begins by mentioning miracles. § 8 - ח also begins by mentioning miracles – possibly by R. Nechemia [mentioned also in § 6 - ו]]. The space for people is too small – p83, line 1; fire from Heaven, [citing Lev: 9:24] in a pillar – does unusual things. "And they all saw this great miracle. Cle Melecha[?] Ch 6, towards end of Zev.

P. 85 gives dimensions of the colored curtains of the Ohel in a way that supports the idea that the kerashim were 1 ama thick top & bottom. Mentions opinion of R. Yose on Au thread in these curtains citing Shem. 39. Question of how many layers in Shem. 26:14 1 cover – p. 86 line 6, sect. 13. Page 89 line 1, R. Nechemia says פספיסין [checkered/ striped?] Lines 2 &3: R. Yehuda: underneath, red goatskin, and above, orot tachashim. רצופות –p88, next to last line, last word – associated with kerashim – means continuous – no gaps between either the kerashim or the sockets of kerashim. It could mean that the frameworks and rows of sockets for them were contiguous – without spaces between them.

[Succah, 48b [98b?] .49a An altar which has not the ascent, horn, base and square shape is invalid. R. Yose b Yehuda adds: also the circuit " See Midos # 1, 1 Cf. Zev. 62a—path to walk around , Midos 3:3 the ramp was 32 cubits long. See Ex.27:5 karkob terrace כרכב . R. Yosef says the fire was 1x1 ama . Zev 62a. Zev 64a- making a circuit of the altar . Zev 64b bird offering from sovaiv.

https://www.sefaria.org/Avot_D'Rabbi_Natan.18.2?lang=bi&with=all&lang2=en 18.2

איסי בן יהודה היה קורא לחכמים שמות. לר״מ חכם וסופר. לר׳ יהודה חכם לכשירצה. לר״א בן יעקב קב ונקי. לרבי יוסי נמוקו עמו ולרבי יוחנן בן נורי

Isi ben Yehudah had names for the sages. He called Rabbi Meir: A sage and a scribe. He called Rabbi Yehudah: A sage in whatever field he wishes to be. He called Rabbi Eliezer ben Ya'akov: A small vessel, but airtight.

He called Rabbi Yosei: The one with the explanation.

דרבי יוסי נימוקו עמו

[Why does it say "his" reasons and not "good" reasons http://rygb.blogspot.com/2005/,Tues, Dec. 20, 2005 Halachah is in Accordance with R' Yose? — Eruvin 83b

But Mesharshia knows Rav doesn't hold by R. Yochanan's rules. Rav was close to R. Chiya HaGadol who had the status of a Tanna.

YOMA , END OF CHAPTER 6

R. Yehuda says that the conclusion of the procedure of the goat that is sent to Azazel is indicated by a flag signaling sytem: derech ha teva. Contrast with this: R. Ishmael said: But they had another

sign too: a thread of crimson wool was tied to the door of the temple, and when the he-goat reached the wilderness the thread turned white, as it is written: though your sins be as scarlet they shall be as white as snow" :somech al ha nes.

NOAH & THE MABUL: THE MOUNTAINS, THE DOVE AND THE DISTANCE

וְהַמַּ֗יִם הָי֤וֹ הָלוֹךְ֙ וְחָסֵ֔ר עַ֖ד הַחֹ֣דֶשׁ הָעֲשִׂירִ֑י בָּֽעֲשִׂירִי֙ בְּאֶחָ֣ד לַחֹ֔דֶשׁ נִרְא֥וּ רָאשֵׁ֖י הֶהָרִֽים׃

Gen 8:5: "The waters went on diminishing until the tenth month; in the tenth month, on the first of the month, the tops of the mountains became visible."

This is in contrast with: Gen 7:19-20:

וְהַמַּ֗יִם גָּבְר֤וּ מְאֹד֙ מְאֹ֔ד עַל־הָאָ֖רֶץ וַיְכֻסּ֗וּ כָּל־הָהָרִ֛ים הַגְּבֹהִ֖ים אֲשֶׁר־תַּ֥חַת כָּל־הַשָּׁמָֽיִם׃ חֲמֵ֣שׁ עֶשְׂרֵ֤ה אַמָּה֙ מִלְמַ֣עְלָה גָּבְר֣וּ הַמַּ֔יִם וַיְכֻסּ֖וּ הֶהָרִֽים׃

19. "When the waters had swelled much more upon the earth, all the highest mountains everywhere under the sky were covered. 20. Fifteen cubits higher did the waters swell, and the mountains were covered."

Gen 8:5, doesn't say the tops of the "highest mountains" or, the tops of "all… the mountains everywhere under the sky" were uncovered or became visible.

Which mountains are they? They are the mountains that became visible to Noah and those with him in the ark. If the ark landed on the top of a mountain, the mountain top would be visible through the water. G-d can "see " the tops of mountains even if they are covered with murky water.

Gen 8:6-12

6. וַיְהִ֗י מִקֵּץ֙ אַרְבָּעִ֣ים י֔וֹם וַיִּפְתַּ֣ח נֹ֔חַ אֶת־חַלּ֥וֹן הַתֵּבָ֖ה אֲשֶׁ֥ר עָשָֽׂה׃
"At the end of forty days, Noah opened the window of the ark that he had made"

7. וַיְשַׁלַּ֖ח אֶת־הָעֹרֵ֑ב וַיֵּצֵ֞א יָצוֹא֙ וָשׁ֔וֹב עַד־יָבְשֶׁ֥ת הַמַּ֖יִם מֵעַ֥ל הָאָֽרֶץ׃
"and sent out the raven; it went to and fro until the waters had dried up from the earth."

8. וַיְשַׁלַּ֣ח אֶת־הַיּוֹנָ֔ה מֵאִתּ֖וֹ לִרְאוֹת֙ הֲקַ֣לּוּ הַמַּ֔יִם מֵעַ֖ל פְּנֵ֥י הָאֲדָמָֽה׃
"Then he sent out the dove to see whether the waters had decreased from the surface of the ground."

9. וְלֹא־מָצְאָ֤ה הַיּוֹנָה֙ מָנ֣וֹחַ לְכַף־רַגְלָ֔הּ וַתָּ֣שָׁב אֵלָ֔יו אֶל־הַתֵּבָ֖ה כִּי־מַ֣יִם עַל־פְּנֵ֣י כָל־הָאָ֑רֶץ וַיִּשְׁלַ֤ח יָדוֹ֙ וַיִּקָּחֶ֔הָ וַיָּבֵ֥א אֹתָ֛הּ אֵלָ֖יו אֶל־הַתֵּבָֽה׃
"But the dove could not find a resting place for its foot, and returned to him to the ark, for there was water over all the earth. So putting out his hand, he took it into the ark with him."

[That it would land on his hand suggests it was his dove – domesticated, used to him & to landing on his hand.]

10. וַיָּ֣חֶל ע֔וֹד שִׁבְעַ֥ת יָמִ֖ים אֲחֵרִ֑ים וַיֹּ֣סֶף שַׁלַּ֗ח אֶת־הַיּוֹנָה֙ מִן־הַתֵּבָֽה׃
"He waited another seven days, and again sent out the dove from the ark."

11. וַתָּבֹ֨א אֵלָ֜יו הַיּוֹנָ֗ה לְעֵת֙ עֶ֣רֶב וְהִנֵּ֥ה עֲלֵה־זַ֛יִת טָרָ֖ף בְּפִ֑יהָ וַיֵּ֣דַע נֹ֔חַ כִּי־קַ֥לּוּ הַמַּ֖יִם מֵעַ֥ל הָאָֽרֶץ׃
"The dove came back to him *["To him", not to the ark – suggesting again that it was his dove – domesticated.]* toward evening, *[This suggests the evening of the same day.]* and there in its bill was a plucked-off olive leaf! Then Noah knew that the waters had decreased on the earth." *[It doesn't say branch or twig – a single torn leaf- which could be newly sprouted from the ground or from a live tree. Olive trees survive under snow for some time – provided it isn't too cold under snow. '…an old rural Italian proverb says in rhyme,*

"Sotto la pioggia, fame; sotto la neve, pane, which means "Under water, famine; under snow, bread." '[840]

"Snow acts as an insulator against extreme cold, protecting the root system of hibernating plants. If the snow cover is reliable, the actual temperature to which the roots are exposed will not be as low as the hardiness zone number would indicate."]

12. וַיָּ֣חֶל ע֔וֹד שִׁבְעַ֥ת יָמִ֖ים אֲחֵרִ֑ים וַיְשַׁלַּ֤ח אֶת־הַיּוֹנָה֙ וְלֹא־יָסְפָ֥ה שׁ֖וּב־אֵלָ֥יו עֽוֹד׃
"He waited still another seven days and sent the dove forth; and it did not return to him anymore."

Why did Noah send out a raven – and then a dove? R Dovid Kimchi says that the Raven was to see if there was carrion – either floating on the water or on the nearby land – but it had either been washed out to sea, dissolved in the water or been eaten by the fish.[841]

The dove was one of Noah's homing pigeons [Radak on Gen. 8:8]– to see if Noah's home area was habitable. 48 days for 1st dove is enough for vegetation to sprout- incl. new growth from dormant trees—or the near surface roots of trees -- blanketed in snow but not very cold.

The 2nd flight of the dove was at 55-56 days and the third dove was 62-64 days after the tops of the mountains were seen– enough time for a lot of vegetation to sprout in the area where the land had dried out – from no rain and lots of sun for 2 months.

Cedar trees normally sprout under the snow -in cracks in the rocks on the mountains – where they're protected from insects and most birds.

There is nothing in the Mabul against plants. An olive tree covered in snow – even for months -- might die back to the ground and regrow from its roots – if it is not too cold. Snow is a good insulator and would protect the tree from the chill of winds – and would remain as snow – at a temperature just below freezing. Such a

840 https://www.oliveoiltimes.com/production/cold-temperatures-can-help-olive-production/55134

841 More comments on the Raven from Chazal, are found at Sanhedrin 108b & Midrash Rabbah 33:5, *Haemek Davar* –Netziv on this verse [Bereishit 8:7] says that the Raven—like the Dove was Noah's Raven. See Rabbi Ari Kahn "The Raven - Nevermore?" , for a diverse selection of traditional comments and original analysis. https://aish.com/48951586/#r6

temp. is probably not very damaging to the tree – even if maintained for months.

[Ramban on Gen.8:11 *"Apparetly the trees were not uproooted or destryed by the flood. There was not a rush of waters; the whole world simply filled up with water.*

[Ramban notes: In Gen Rabbah, *R Levi says the olive branch came from the Mt. of Olives ; R. Bebai says the gates of Paradise opened he says maybe the trees in Israel were not detroyed by the rush of waters but certainly there were no fresh leaves – and more…]*

A seagull, albatross, or arctic tern, could fly over large expanses of water – and land on the water and eat fish from the water – and would have no reason to return – even if the whole area was still under water except for ice covered mountain peaks. An alpine swift can fly for months without landing – but can live on insects in the air and would have no reason to return to the ark. None of these are "clean" birds.

The dove could not fly over the whole earth – in a day or even in a week – even if it flew 600 miles a day – or if it was carried in a jet stream. If it was flying too high, it could see far but not clearly enough to know if the ground was dry. " for there was water over all the earth" can't –without relying on miracles-- refer to the whole planet and explains why the dove found no rest for its foot in the local area -within a few hundred miles of where the ark came to rest.

It could be translated as "all the land" not "all the earth". If it meant the latter it would be better to add – as it did with the high mountains "under the whole of heaven" This would incl. even the unpeopled islands in the midst of the sea. Dt 2:25, Dt 4:19; Job 28:24, 37:3, 41:11; Dan 7:27;

There is also the phrase: עַל־פְּנֵי כָל־הָאָרֶץ "on the face of the whole earth" Gen 1:29; 8:9;[Migdol Bavel] 11:14 locusts in Egypt – clearly not the whole world ?]Ex 10:14-15

וַיַּעַל הָאַרְבֶּה עַל כָּל־אֶרֶץ מִצְרַיִם וַיָּנַח בְּכֹל גְּבוּל מִצְרָיִם כָּבֵד מְאֹד לְפָנָיו לֹא־הָיָה כֵן אַרְבֶּה כָּמֹהוּ וְאַחֲרָיו לֹא יִהְיֶה־כֵּן׃

וַיְכַס אֶת־עֵין כָּל־הָאָרֶץ וַתֶּחְשַׁךְ הָאָרֶץ וַיֹּאכַל אֶת־כָּל־עֵשֶׂב הָאָרֶץ וְאֵת כָּל־פְּרִי הָעֵץ אֲשֶׁר הוֹתִיר הַבָּרָד וְלֹא־נוֹתַר כָּל־יֶרֶק בָּעֵץ וּבְעֵשֶׂב הַשָּׂדֶה בְּכָל־אֶרֶץ מִצְרָיִם׃

14 "And the locusts came up over all the land of Egypt, and settled on the whole country of Egypt, such a dense swarm of locusts as had never been before, nor ever shall be again. 15. For they covered the face of the whole land, so that the land was darkened, and they ate all the plants in the land and all the fruit of the trees which the hail had left; not a green thing remained, neither tree nor plant of the field, through all the land of Egypt."

As strict terrestrial birds, pigeons are neither able to swim nor float, hence they generally avoid flying over water surfaces; when forced to cross them, they choose the shortest way to the coast" [842] What about ducks?-clean, migrates long distances, eats plants & fish, lands on water?

It's R.Yehuda b Illai [Midr Rab 31:13]who says Noah took the baby re'ims into the ark—while R. Nechemia, says the baby reim was so large, it ploughed a furrow like the distance from Tiveria to Susitha.[843]

רַבִּי יְהוּדָה וְרַבִּי נְחֶמְיָה, רַבִּי יְהוּדָה אוֹמֵר רְאֵם לֹא נִכְנַס עִמּוֹ, אֲבָל גּוּרְיוֹ נִכְנְסוּ. רַבִּי נְחֶמְיָה אָמַר לֹא הוּא וְלֹא גּוּרְיוֹ, אֶלָּא קְשָׁרוֹ נֹחַ בַּתֵּבָה, וְהָיָה מַתְלִים תַּלְמִיּוֹת כְּמִין טְבָרְיָה לְסוּסְתָּא

In Zev. 113b, it is R. Yannai who says Noah took the baby Reims into the Ark.[844]

א"ר ינאי גוריות הכניסו בתיבה: והאמר רבה בר בר חנה לדידי חזי לי אורזילא דרימא בת יומא והוי כהר תבור.

Both R. Yannai & R. Yehudah b Illai were contemporaries of Yehudah ha Nasi. Their lives may have overlapped. Ba.Basra 73b among other stories of a similar kind . Rabbah [bar bar Hanna] said: I saw an [reim] antelope, one day old, that was as big as Mount Tabor.

Many animals routinely survive buried in snow – bears in Alaska hybernate for up to 1/2yr. This would save animals that didn't sin with people – as fish were saved.

When Ramban says ark would have to be >10× its actual size to hold all the animals and supplies [see footnote 703 A.] , he doesn't mention that R. Yehuda b Illai & R Yanai say Noah took the babies. [Newborn [wild moose] calves generally:13-16 kg…Calves begin nursing within 1st few hrs following birth & take solid food a few days later…Adult: males…:542-725 kg; fem: 364-591 kg).[845] With clean animals, 6 pair could be babies, 1 pair adults, both for nursing & teaching.

DUST TO DUST

A friend, [S.Y.R. Nisan 5781] said the problem with Darwinian evolution is realiance on chance instead of on God. However we can observe brownian motion – which appears to be chance-- & see how it leads to self aseembly of seemingly simple crystals and more complex systems like molecular machines of cells or entire viruses. We can say what appears to be chance is actually directed – do we say the choice of lots on Yom Kippur – which determines which goat goes where—is a matter of chance – and Hashem has no part in it?!!

WHAT DO CHAZAL SAY? NEEDS A LOT MORE RESEARCH

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[842] F. BONADONNA , L. Dall'Antonia , P. Ioalè, S. Benvenuti, 1997, "Pigeon homing: The influence of topographical features in successive releases at the same site" Behavioural Processes V. 39, Issue 2, Feb., p. 137-147; Gerhart WAGNER,1972 "Topography and Pigeon Orientation" [Swiss National Foundation for Scientific Research] p 259-273 in "Animal Orientation And Navigation", 606 p. GALLER, Sidney R.; Smithsonian Institution, American Institute of Biological Sciences https://ntrs.nasa.gov/citations/19720017427

[843] https://www.sefaria.org/Bereishit_Rabbah.31.13?lang=bi&with=all&lang2=en

[844] sefaria, Zev. 113b https://www.sefaria.org/Zevachim.113b.8?lang=bi&with=all&lang2=en

[845] Robert A RAUSCH, et al 2008, "Moose." Alaska Dept. of Fish & Game https://www.adfg.alaska.gov/static/education/wns/moose.pdf

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SPECIAL PARSHIOT FOR YOM TOVIM AND OTHER SPECIAL TIMES

A ♦ INDICATES THAT A POSSUK FROM THAT READING IS CITED IN THE TEXT.

SPECIAL TIME	TORAH READING	MAFTIR /EXTRA	HAFTORAH	KSUVIM
Rosh Hashanah, Day 1	Gen 21:1-34♦	Num 29:1-6♦	I Sam 1:1-2:10	
Rosh Hashanah, Day 2	Gen 22:1-24♦	Num 29:1-6♦	Jer 31:1-19	
Shabbat Shuvah			Hos 14:2-10, Mic. 7:18-20♦, Joel 2:15-27	
Yom Kippur, Morning	Lev 16:1-34♦	Num 29:7-11♦	Is 57:14-58:14	
Yom Kippur, Afternoon	Lev 18:1-30♦		Jonah 1:1-4:11♦, Mic. 7:18-20♦	
Sukkot, Day 1	Lev 22:26-23:44♦	Num 29:12-16♦	Zech 14:1-21	
Sukkot, Day 2	Lev 22:26-23:44♦	Num 29:12-16♦	I Kings 8:2-21	
Sukkot, Chol Ha-mo'ed	Num 29:17-34♦			
Sukkot, Intermed. Shab.	Ex 33:12-34:26♦		Ezek 38:18-39:16	Ecclesiastes♦ ↓ [Custom varies]
Hoshanah Rabbah	Num 29:26-34♦			
Shemini Atzeres	Deut 14:22-16:17♦	Num 29:35-30:1♦	I Ki 8:54-9:1	Ecclesiastes♦ ↑
Simchas Torah	Dt 33:1-34:12♦ Gn 1:1-2:3♦	Num 29:35-30:1♦	Josh 1:1-18, (Josh 1:1-9)	
Chanukah days 1-5	Num 7:1-17,- 25,-35,-41, -47♦			
Chan. day 6 (Rosh Chod.)	Num 28:1-15♦, 7:42-47♦			
Chan. day 7 (not R. Chod.)	Num 7:48-59♦			
Chan. day 7 (Rosh Chod.)	Num 28:1-15♦, 7:42-47♦			
Chanukah, Day 8	Num 7:54-8:4♦			
Chanukah, 1st Shab.		Num 28:9-15♦	Zech 2:14-4:7	
Chanukah, 2nd Shab.		Num 7:54-8:4♦	I Ki 7:40-50	
Shekalim		Ex 30:11-16	II Ki 11:17-12:17, (II Ki 12:1-17)	
Zakhor		Deut 25:17-19♦	I Sam 15:1-34♦	
Purim	Ex 17:8-16♦			Bk of Esther♦
Parah		Num 19:1-22♦	Ezek 36:16-38, (Ezek 36:16-36)	
Ha-Chodesh		Ex 12:1-20♦	Ezek 45:16-46:18, (Ezek 45:18-46:18)	
Shab. Ha-Gadol			Mal 3:4-24	
Pesach (Passover), Day 1	Ex12:21-51♦	Num 28:16-25♦	Josh3:5-7; 5:2-6:1; 6:27, (Josh 5:2-6:1)	
Pesach (Passover), Day 2	Lev 22:26-23:44♦	Num 28:16-25♦	II Ki 23:1-9; 21-25	
Pesach, Chol Ha-mo'ed, Day 1 / 2	Ex 13:1-16♦ / 22:24-23:19♦	Num 28:19-25♦		
Pesach, Chol Ha-mo'ed, Day 3 / 4	Ex 34:1-26♦ / 9:1-14♦	Num 28:19-25♦		
Pesach, Intermediate Shab.	Ex 33:12-34:26♦	Num 28:19-25♦	Ezek 37:1-37:14, (Ezek 36:37-37:14)	
Pesach (Passover), Day 7	Ex 13:17-15:26♦	Num 28:19-25♦	II Sam 22:1-51♦	
Pesach (Passover), Day 8 (weekday)	Deut 15:19-16:17♦	Deut 14:22-16:17♦	Is 10:32-12:6	
Pesach (Passover), Day 8 (Shab.)	Deut 14:22-16:17♦	Deut 14:22-16:17♦	Is 10:32-12:6	Song of Songs♦
Shavuos, Day 1	Ex19:1-20:23♦	Num 28:26-31♦	Ezek 1:1-28; 3:12	
Shavuos, Day 2 (weekday)	Deut 15:19-16:17♦	Num 28:26-31♦	Hab 2:20-3:19	Book of Ruth♦
Shavuos, Day 2 (Shab.)	Deut 14:22-16:17♦	Num 28:26-31♦	Hab 2:20-3:19	
Tisha B'Av, Morning	Deut 4:25-40		Jer 8:13-9:23	
Tisha B'Av, Afternoon	Ex 32:11-14, 34:1-10♦		Is 55:6-56:8, (Hos 14:2-10; Mic. 7:18-20) ♦	
Minor Fasts, Morning	Ex 32:11-14; 34:1-10♦		Is 55:6-56:8, (none)	
Minor Fasts, Afternoon	Ex 32:11-14; 34:1-10♦			
Shab. Mevarchim (bef. Rosh Chod.)			I Sam 20:18-42	
Rosh Chodesh (weekday)	Num 28:1-15♦			
Rosh Chodesh (Shab.)	Num 28:9-15♦		Is 66:1-24	

GOLD AND PURE GOLD IN THE MISHKAN AND CLOTHING OF THE COHEN GADOL

LINE #	TYPE OF OBJECT [3]	PART OF MISHKAN ENGLISH	HEBREW	WEIGHT * & PROCESS **	FOOT-NOTE/ P.#	PSUKIM	MAT'L: [1] G or PG	CUMULATIVE PROBABILITY [2]		COMMENTS [SEE ALSO FOOTNOTES AT BOTTOM & DISCUSSION IN BOOK]
1	RINGS [3]	ARON KODESH /ARK	אארון קודש	K C	193-G.1/54	SH 25:12,37:3	G	1/2	2/3	Subject to impact or shock in transit that could cause visible damage if PG. As poles fit rings closely, there'd be little impact, but shock with ordinary jostling from carrying on shoulders.
2	"	SHOW BREAD TABLE	שולחן לחם הפנים	K C	193-G.5/54	SH 37:13	G	1/4	4/9	
3	"	INCENSE ALTAR	מזבח הקטרת	K M	193-G.6/54	SH 30:4, 37:27	G	1/8	8/27	
4	"	BOARDS/WALLS/KRASHIM	קרשים	K M	193-G.2/54	SH 26:29,36:34	G	1/16	16/81	Impact from wind gusts & stresses inserting/removing bars
5	"	CHOSHEN, UPPER EDGE	חשן	M	193-H.9/54	SH 28:23	G	1/32	32/243	Impact from jostling while walking, standing up, sitting down & throwing sacrif. Stones are heavy (~50g?)comp. to norm'l gems (<5g), jostled much more, every day, for >800 yrs.[see#11& #13]
6	"	CHOSHEN, LOWER EDGE	חשן	M	193-H.10/54	SH 28:26,39:19	G	1/64	64/729	
7	"	LOWER SIDE SHOULDER PIECES	על־שתי כתפות האפד	M	193-H.11/54	SH 28:27,39:21	G			
8	HOOKS	VEIL IN FRONT OF ARK	פרכת	M?	193-G.3/54	SH 26:32,36:36	G			Hooks would be visibly deformed & then fail.
9	"	SCREEN FOR ENTRANCE	ווסך לפתח האהל	M	193-G.4/54	SH 26:37,36:38	G			
10	"	COUPLING CURTAINS	חרסי	M	193-G.7/54	SH 26:6	G			
11	SETTINGS	FOR SHOULDER PIECE STONES	וישמו את־אבני השהם מסבת משבצת	M	193-H.8/54	SH 28:11;39:6,7	G			#12 is like hooks & rings:stressed by chain[#38]holding choshen.
12		To ATTACH CHAINS To SHOULDER PIECES	שתי השבעת נתנו על־שתי המשבצות	M	193-J/54	SH 28:13,14;39:18	G			#11 & #13: stressed by inertia of stones while walking/throwing.
13	"	FOR CHOSHEN STONES [5]	תרשיש שהם וישפה מוסבת משבצות	M	193-H.8/54	SH 39:13, 28:20	G	~1/8E3 [4]	~1/195	Big dif. in therm'l expan. Au:SiO2 deforms pure Au;[see#5,#6,#7]
14	POLES	ARON KODESH /ARK	בדים	K צ	193-I.1/54	SH 25:13	G			Poles are covered with Au & inserted in rings & are subject to impact damage in transit. Poles for Showbread Table & Incense Altar also subject damage when stacked/stored.
15	"	SHOW BREAD TABLE	שולחן לחם הפנים	K צ	193- I.1/54	SH 25:28	G			
16	"	INCENSE ALTAR	מזבח הקטרת	K צ	193- I.1/54	SH 37:28	G			
17	BARS	BOARDS/WALLS/KRASHIM	קרשים בריחם	K צ	193- I.1/54	SH 26:29	G			
18	WALLS	KRASHIM ARE CLAD IN GOLD	קרשים	K צ	193- I.2/54	SH 26:29,36:34	G			Subject to visible damage when walls and pillars are put up & taken down, when stacking & carrying in wagons & by windforces on standing walls.
19	PILLARS	AU CLAD PILLARS OF VEIL	עמודי ששים פרכת	K צ	193- I.3/54	SH 26:32,36:34	G			
20	PILLARS	TOPS OF ENTRANCE PILLARS	מסך לפתח האהל עמודי ששים	K צ	193- I.3/54	SH 26:37,36:38	G			
21	BANDS [6]	AROUND ENTRANCE PILLARS	פתח האהל חשקיהם	K צ	193- I.5/54	SH 36:38	G	~1/2million	~1/5k	
22	BORDER	ON ARK	זר זהב סביב	K? M	193- I.4/54	SH 25:11,37:2	G			Probably protective molding &/or symbolic protective fence & so, stronger than necessary for beauty alone. If PG, something bumping them would bend them out of shape. [7]
23	"	INCENSE ALTAR	זר זהב סביב מזבח הקטרת	K? M	193- I.4/54	SH 30:3,37:26	G			
24	"	SHOW BREAD TABLE	זר זהב סביב שולחן לחם הפנים	K? M	193- I.4/54	SH 25:24; 37:11	G			PG surface wears out much faster –by smearing- than AuCuAG alloy. When PG surface 'smears out', the rest falls out.[8]
25	"	SHOW BREAD TABLE	זר־זהב למסגרתו סביב "	K M	193- I.4/54	SH 25:25; 37:12	G			Rambam says thread is PG in Temple,see Footnote 193-M[צ״ע]
26	THREADS	GOLD THREADS IN EPHOD	פתילם אפד	T	193-M-O/54-5	SH 28:6;39:3	G			R. Yose says curtains & paroches also G, see Footnote 836-B
27	"	GOLD THREADS IN CHOSHEN	פתילם חשן	T	193 "	SH 28:15;39:3	G			
28	"	GOLD THREADS IN BELT	פתילם חשב	T	193 "	SH 28:8;39:3	G	~1/1,3E8	~1/57k	
29		MENORAH [9]	מנורה	K B	192-B/54	SH 25:31,BM4:9-10	PG			Not subject to impact in use, carried in a special bag/wrapping [10]
30		MENORAH'S TONGS	מלקחים	M	192-B/54	SH 25:38	PG			Thicker & heavier so they wouldn't be deformed in ordinary use & much more difficult to lose. No spring action needed.
31		MENORAH'S SCOOPS	מחתה	M	192-B/54	SH 25:38	PG			
32		ARK – INSIDE	מבית	K צ	192-D/54	SH 25:11	PG			Not subject to impact in use.[11] Bottom of #33 needs thicker Au, as it may rest [but not slide] on rough stone or sand. Ditto: bottoms #35 & #39- & shield wood from termites, etc. See Footnote 359-C
33		ARK –OUTSIDE	מחוץ	K צ	192-D/54	SH 25:11	PG			
34		ARK-COVER & CRUVIM [12]	כפרת , כרבים	K B	192-C/54	SH 25:17	PG			
35		INCENSE ALTAR COVERING [13]	מזבח הקטרת	K צ	192-A/54	SH 30:3	PG			More resistant to fire, oils & sweat | Not subject to significant impact in use
36		PLATE TIED TO TURBAN [ENGRAVED]	ציץ מצנפת	M	192-A/54	SH 39:30	PG			
37		BELLS ON ROBE [14]	פעמנים מעיל	M	192-A/54	SH 39:25	PG			
38		CHAINS HOLDING BREASTPLATE [15]	שרשת חשן	W	192-E/54	SH 28:14,22;39:15	PG			מַעֲשֵׂה עֹבֵת:woven thin wire, no links; won't show wear/deformation
39		SHOW BREAD TABLE	שולחן לחם הפנים	K צ	192-F/54	SH 25:23-4	PG			Not subject to impact in use. Contact is with bread & other PG utensils connected with this table. Rings are presumed to have been anchored in the wooden base/core of the table. See footnote 4–C&D
40		ITS DISHES [16]	קערתיו "	K? M	192-F/54	SH 25:29	PG			
41		ITS SPOONS [17]	כפתיו "	K? M	192-F/54	SH 25:29	PG			
42		ITS COVERS [16]	קשותיו "	K? M	192-F/54	SH 25:29	PG			
43		ITS BOWLS [16]	מנקיתיו "	K? M	192-F/54	SH 25:29	PG	~1/(9E12)	~1/(1E12)	
44		INCENSE ALTAR-VESSELS	מזבח הקטרת	K	Not in main text yet	BM 4:12	?			Rashi : coal shovel & incense scoop? What material? [18]
45	BAR/S	FOR CARRYING MENORAH [& #44? × 2 ?]	המנרה	K		BM 4:10, 4:12	?			Probably Au covered & subject to wear like poles at #14-16
46		MENORAH VESSELS FOR POURING	כל־כלי שמנה אשר ישרתו־לה בהם	K		BM 4:9	?			Vessels for pouring & measuring oil for burning. [19]
47		VESSELS FOR HANDLING BLOOD		K		See footnote 865below	?			Blood is collected in, stirred in & applied from Au vessels? [20]

1. Material item is made from:Gold:G=זָהָב or Pure Gold:PG=זָהָב טָהוֹר. There's a very strong pattern of using G, not PG, where item would be subject to visible damage[or failure: #11&13] in ordinary use if made of PG --evidence Mishkan & Priestly Clothes were made by 'Natural Law'. #

2. Left side assumes: G & PG equally likely. But, since PG is more difficult, time consuming & therefore more costly, they aren't equally likely & we'd need good reason to use PG – spiritual or practical. Size also matters: small rings [#5,6&7] would have less cost difference between PG & G than large rings for Ark, Table & Insense Altar[#1,2,3]. Same applies to Turban's PG plate [#36] vs PG plates of Ark, Insense Altar & Table [#32-35 & 39].The latter, much larger objects, would more likely be G. So also: hooks, settings & rings for holding chain —all quite small[#'s 5-13]-- should be PG – but none are. For Right side of column, see footnote 4 -C.

3. A. Rings should be mounted in underlying wood or, for #5,6&7, in underlying fabric or other material that wouldn't be visibly deformed in use. B. Rings were 'cast' - יָצַק for aron[#1] SH25:12,37:3 & table[#2][SH25:26 'make', not cast, but at]SH37:13 it says cast. For the rings of Incense Altar[#3]SH30:4,37:27 it says make, not cast.[Maybe because there may only be 2?]The only other items cast, aren't Au, eg. 5 Cu sockets for door - פֶּתַח הָאֹהֶל [#20]SH26:37;4 Ag sockets for פֶּרֹכֶת [#18]SH36:36; 4 Cu rings for Cu altar SH38:5;100 Ag sockets for קְרָשִׁים & פֶּרֹכֶת SH38:27.

4. A. Full study should incl. assessment of G/PG by experts not learned in Torah. B. I saw rings of Ark[#1]–which we learn 'carried itself', were G, while rest of Ark's metal was PG[#32-4] & hpyothesized: 'All rings & similar parts that, like Ark's rings, would be visibly deformed in ordinary use if PG, would be G.' Before checking, I had no conscious awareness of what would be found & was similarly unaware of: 6 sets of ring-like structures in Cohen Gadol's clothing[#5,6,7,11,12 &13]; curtain hooks[#8-10] were Au, & chains [#38] weren't made of links. [So this study is close to suggested study at A, supra, at least up to line #13.] Then I saw cladding for carrying poles fit same pattern & then sought all Au mentions in Mishkan & Bigde Cahuna. C. Right side of col. shows 2:1 odds for G:PG based on items [1-13]+3 parts of Aron[#32-4], Au Altar[#35], Chains[#38] & Table[#39]. 2:1~ ratio found: 28G:15PG, for 43 items with data in table. 'Chance' 43 items come out this way=1/((2/3)^{28}×(1/3)^{15}) 1 in 1.2 trillion, however: D. Designs of some parts aren't so clear, eg: Borders[#22-5]; parts of Menorah[#30-31]& Table[#39-42].- צ״ע

5. Assumes all 12 Choshen stones [#13]are enclosed. Torah says מְשֻׁבָּצִים זָהָב יִהְיוּ בְּמִלּוּאֹתָם SH. 28:20. If PG, micro-dents from thermal expansion differences & jostling choshen or shoulder straps [#11] walking or throwing would grow over centuries to where a stone rattles & falls out.

6. Bands[21] decorating & protecting wood, also bound outer parts of hollow pillars together [from root חָשַׁק=to cling, join, love]. חַשְׁקֵיהֶם is also used for Ag bands on courtyard pillars [SH27:10,11;38:17]-suggesting they're hollow-like Cu altar, which is called hollow [SH:28:7,37:8]& the Au altar – which is understood to be hollow from the fact that it has a roof[SH:30:3]. We learn Ag sockets - supporting קְרָשִׁים were hollow, as we're given their H,L&W [1cH×3/4cL×1cW]; material, [Ag] & weight, 1 kikar[SH38:27]. Space for tenon[cross sect.= .5c×.25c=.125c^2= 1/6th cross sect. of socket[Baraisa d'Melaches Ha Mishkan,Ch.1]1c=.5m;.5m×.5×.375m=.094m^3; ×5/6=.078m^3×10.5mt/m^3[Ag density, see table, p41]=820kg=16.4 kikar, @50kg/kikar. Since >99% of 1/2 Ag shekel/man were for 100 kikar of these 100 sockets [SH30:13-15;38:25-28],we learn we should be very careful to know the material nature of our work when spending compulsory public contributions–even in matters of holy things.[Thought:leyl Shabbes Ki Sisa,5779,walking from Ohr Someyach to home of R.Y.D.Biderman, Shleeta & said 1st time at his table. SH36:3-7 suggests doing a bit more than the design target is good.[thought at R.Biderman's table,leyl Shab,next wk.] R. Chaim Kaniefsky, shleeta, in Ta'ama D'kra, beginning of Pekudei, notes: Chazon Ish said sockets must've been hollow [note 15, p97,Dovid Meyers [see footnote 216-A]

7. See footnote 193.I.4 for more details. Maybe 2 on Table – but counted as 1 item – as other multi-unit parts of Table have each been counted as 1 item. The term לְמִסְגַּרְתּוֹ [at line #24] strengthens the idea that these Borders served as a protective molding. צ״ע Needs more study.

8. '…gold was worn off easily' p6 [s'rce of learning PG wears faster than G]'Metal Threads:The Historical Development' Anna Karatzani, Ta pragmata Pub., Athens,'12,_____ Belt of Ephod tied in front:AU thread-thread contact:wear & smear. Josef Starlaci of Ohr Someach asked: where AU thread would be in self contact to produce wear & smear? Nisan, 5782

9. But we learn '*…the work of the menora, beaten work of G* -- וְזֶה מַעֲשֵׂה הַמְּנֹרָה מִקְשָׁה זָהָב' BM 8:4. but at SH37:17 'And *he made the menorah of PG: of beaten work made he the menorah* -- וַיַּעַשׂ אֶת־הַמְּנֹרָה, זָהָב טָהוֹר; מִקְשָׁה עָשָׂה אֶת־הַמְּנֹרָה'; & in Men.28b we learn Menorah can be any metal – even wood – based in part on 1st Hasmonean Menorah [Rosh HaSh. 24b, Avod.Zar 43a [In SH37:17, description is more complete & precise; in BM8:4: how it was made, even 7 branches left out.]. PG is also more resitant to chemical reaction with oil & residues of burning, both of which may contain sulfer, which chemically reacts with & tarnishes/discolors Ag & Cu.

10. Menorah & its utensils are placed into what Rashi calls a 'pouch' of [blue dyed oryx hide] tachash skins which would be a good cushion. More on tachash, see footnote 153–R.

11. Inside would be damaged in transport if luchos/stone tablets – were placed directly on PG. However, this would be true of any mix of Au, Cu or Ag [See Table, p 41, for hardness values.] Damage would be much greater if broken luchos were in Ark. Luchos would also damage each other in transport – by knocking against each other. This suggests: luchos -- whole & broken -- were placed in wooden frames- to prevent stones from scratching anything, distribute their weight evenly over a wider surface & prevent contact with hands - like Eitz Chaim of Sefer Torah. Ratio of volume of framed & unframed luchos is similar to ratio of sefer Torah w & w/o Mizrachi/Temeni cylindrical Eitz Chaim. For detailed discussion, see p 38, footnote 126.B.6.

12. Ark Cover & Cruvim are made of 1 piece of Au [SH25:19] –presumably PG. If the 2 combined = 1 kikar [see footnote 197]Cruvim would have to be hollow with PG ~1 mm thick. If wings didn't join where they touched, they'd be very unstable. They could've also been made with internal Au stiffening elements – ridges or pillars- drawn out of the surface.

13. Altar PG[#34]=1 kikar[see footnote 197]& 1 denarius thick [Reish Lakish,200-275CE, Chag. 27a].Denarius of S.Severus,202-14CE,~20mm diam,2.6-3.6gm,_____~10g/cm^3[≤70%Ag],avg thickness ~1mm. Top, more subject to wear=1mm thick; sides & horns, inside & out= .5mm;top: 1c^2=.25m^2=.25liter;sides:2c×1c×4×~2 [thick edge on ground]~16c^2]=4m^2,+horns:10cm× 4×4]= .16m^2;=4.16m^2=2.08 lit. at .5mm thick=2.33liter,×19.3=45kg[+Au rings?]~50kg=1kikar .[May find thickness & wt of "similar" Au objects where Torah has ~'...overlay it-וצפית.'] For Aron's PG outside[#33]2.5c×1.5c×3]+[[1.5c]^2×2]=11.25+4.5=15.75c^2=3.9m^2+3.5m^2 for inside+.9m^2 for inside of cover=8.3m^2; If.3mm thick [sides protected by staves] ~48kg, excl rings. Non-PG overlays could be thinner, eg: krashim of 4 sq. poles, 5cm/side, 5 m tall+1 pole for horiz. bracing=.2m× 5m×5=5m^2=5lit. & 90kg/mm thickness[at18kg/l]. With 48 krashim & 29kikar tot. Au[SH 38:24], & 6+ kikar for [#29-35&39-43], + Au for rings, poles, etc. thicknesss was probably ≤.25mm.

14. At SH 28:33,34 they're just Au & the focus is pomegranates' colors & placement. At SH 39:26, the bell material is not noted & focus is on position. If, as we'd reasonably expect, robe was handled with care, hung up when not in use, protected in transit & its hem not stepped on, etc., pure Au is OK. [Pure Au bell ~1cm d. with small loop at end & sealed, internal, 4mm thread as clapper, found near Temple Mt. by E. Shukron/Israel Antiquities Auth. 7/'11. Bell displayed in Israel Mus.,then withdrawn:told to me by 2 senior museum staff 11/25-6/'18.]

15. At SH28:24 & 39:17, same chains are 'Au' – not 'pure Au'. However, at both places, the material of the rings to which the chains are attached isn't stated. Where both materials are given (SH 28:22-3&3915-16), 'pure Au' of chains is contrasted with 'Au' of rings.

16. Possessive is used to show connection to Table. Exact meaning is disputed.

17. Pans כַּף like rest of vessels, are PG, But 10 shekel pans כַּף [BM7:14-80]are only G. Also, PG isn't among donations for Mishkan - SH25:2 & 35:5 – suggesting it was refined in midbar.

18. There are at least 2 items here – maybe also mortar & pestle -which in Temple were made of gold. The Torah doesn't appear to specify what kind of gold –צ״ע .

19. 'כל־כְּלֵי שְׁמִנָּה אֲשֶׁר יְשָׁרְתוּ־לָהּ בָּהֶם' Not directly described in Torah, but see: a. 'Baraita De-Melekhet Ha-Mishkan A Critical Edition With Intro and Translation, Robert Kirschner, '92, 318+ p & b. סער מלאכת המשכן וכליו 540+p,'03,R.Dovid Meyers- אשר דוד מייערס, author - צ״ע.

20. Au vessels for holding sacrificial blood in the Temple—were Cu in the Mishkan, as stated in SH38:3. See footnotes 346,349D&E & drawings on p 94&95-[צ״ע -requires further study].

*. K: Au of ea. piece, e.g. 1 ring, >50ml &≥1 kg.; no K:<1kg. **. צ: צְפִיָּה Overlayed; B: מִקְשָׁה Beaten Work; C: יְצֻקָה Cast; M: עֲשָׂה Made; T: beaten & cut קָצַץ into Thread; W: עֲבֹת Wreathen

#. 10+ nissim assoc. w. Temples: Yoma 21a;Avos 5:5/7;J.T.Yoma1:4- R.Avun: 'You shall not test Hashem' Dt.6:16; Pes. 64: לא סמכינן אניסא Raba: 'We don't rely on a Miracle' Built by'natural law'–e.g.: iron roof-top 'crow chasers' כלייא עורב -Midos 4:6; Shab.90.; Men.107. צ״ע

PURIM TORAH:

A. S. Adler 18 Adar ,[last 3 paragraphs added 9 Nissan, corrected 29 Nissan] 5781, Jerusalem

Talmud Bavli, Megillah(7b): *Rava said: A person is obligated to drink on Purim until he does not know the difference between "cursed be Haman" and "blessed be Mordechai."*

When a person goes from a good place to a bad place, we can say they are cursed and when a person goes from a bad place to a good place, we can say they are blessed. Haman being hanged looks like he was cursed and Mordechai becoming prime minister looks like a blessing – but is this really what happened? Was Haman Cursed – was Mordechai Blessed? What's the Emes here?

We say that when a person reaches 120 years-- or for most of us, some years before- they go to the **Olam ha Emes** – **The World Of Truth**. Since in the Olam ha Emes there is no Shecker – falsehood – and in this world – the world in which we spend our 120 years – or less – there clearly is Shecker – it appears that the plain situation was that Haman went from this world – **The World Of Falsehood** – to **The World Of Truth** -- from the **Olam ha Shecker** to the **Olam Ha Emes. This clearly looks like an improvement for Haman – a clear Blessing.**

What happened to Mordechai? Before events recounted in such detail in Megilas Esther, he was sitting and learning in a kollel surrounded by other kolleleit – anshi emes – **Men Of Truth**. And where is he at the end of the story? He's prime minister – surrounded by politicians each lying their best to get the biggest share of the pie that Mordechai appears to control. **So Mordechai looks like he went – in all truth-- from a World of Truth to a world of falsehood—Mordechai looks like he was cursed.**

Now Rava says that we should drink until we don't know the difference between "cursed be Haman" and "blessed be Mordechai". To this point, we've achieved "not knowing…" without drinking at all! But how long must we remain in this so desired state? For a minhag d'rabonin– a short time for "unreason" appears reasonable-- like the time it takes the sun to set in Jerusalem – or in Shushan – at the time of year these events came to a head – the time of the Peysach. The sun – as we see it from Earth -is 1/2 degree of arc in diameter. It takes one minute to go from half-way below the horizon to the when it disappears. This minute – when day and night, light and dark – good and not good are in a balance --looks like an appropriate time for our unusual state of mind – of not knowing…

So, what was the reality? Though there is falsehood in this world ——and some choose to focus on this -- **The World Of Truth** always follows this world – and never the other way around. In Torah – the word **Emes- truth** -- is often closely paired with the word **Chesed – kindness** – and in every case, Chesed comes first. Since there is no Chesed in The World Of Truth – this world can be called **The World Of Chesed**. So Haman went from the World of Chesed – where he rejected Chesed – to The World Of Truth – where those – like Haman – who reject Chesed – go to the section of the Olam ha Emes – called Ghehenon – Hell. And Mordechai? He went from a place where his open power to do chesed was limited by the small circle who knew him directly, to a circle where he could directly influence the lives of millions–and ultimately, the world.

So, from this minute it took to read - from confusion to clarity restored, we should go to even greater clarity: Wherever we are, our power to influence the world is really not so limited and real chesed extends throughout time and space –but being put in a position where we can act more directly to promote Chesed in the world is a real advance. For those who doubted it –even for a minute – **Haman went to Hell** and **Mordechai went from Good To Better** – which should always be our aim and our reality .

Now that we have seemingly accomplished our goal of *not knowing the difference between "cursed be Haman" and "blessed be Mordechai"*, we should look more closely at this goal—though it is better -- under ordinary circumstances to understand our goals before we even aim to achieve them. Not knowing the difference between *"cursed be Haman" and "blessed be Mordechai"*, isn't the same as not knowing right from wrong in general. There are dimensions and degrees to and of "not knowing". If we take a sledgehammer approach to achieving our target state of "not knowing" – by , for example – drinking a lot of vodka – we can quickly reach a point where we don't know how to drive a car – or even where the bathroom is. This could put us in a position of committing real averas, Chas V'Shalom. Further, just as every mitzvah has a suitable sheor or measure and having too much or too little can be either a non-mitzvah or even an averah—like a woman who takes two or more husbands—lo-aleinu. The Vodka route to achieve the desired state of "not knowing" will not only extend the time far beyond the most suitable sheor – but will – very likely, lead us to not knowing how to properly conduct the other mitzvahs we are supposed to do – or even to commit sins, God forbid.

The method presented in this Purim Torah provides both the most appropriate sheor in time – one minute -- and the most focused sheor in impact – the best of the best for us, for those around us and for the World.

[Most of this Purim Torah was thought of and said for the first time at the Shushan Purim Seuda of R. Mordechai Brimm, 5781—with several Brisk students in attendance.]

[Adar I, 5782, [F⁄ 7⁄22], at Ohr Someyach, I heard Rabbi David Gottlieb, PhD, say that seeing that both received Justice—or sleeping --achieve the desired state of mind – without any drunkenness- the latter recommended by R. Moshe Isserles, "Rema" רמ״א [1530-'72]– for Ashkenaim.]

LEARNING
FROM THE
KSAV IVRI- כתב עִבְרִי
[PALEO HEBREW]
Aleph-Bes

About the life and times
of the people
who first used it-
and what it means for us today.

[THIS IS A DRAFT & INCLUDES MANY CONJECTURES WHICH SHOULD NOT BE UNDERSTOOD AS FACT.]

PART 1: Introduction – background and time frame
PART 2: The 22 letters – For each: – its appearance, meaning, origin & explanation of its sequential order.
PART 3: Types of letters: What's there, what isn't there-& what this says about the originators of KSAV IVRI.
PART 4: Steps involved in Inventing the Alpeh Bes.
PART 5: The spread of KSAV IVRI- כתב עִבְרִי in the world
PART 6: What's the best name for this set of letters?
PART 7: Who created these letters?
PART 8: When was the Aleph Bes Created?
PART 9: A Gap of Six Centuries?
PART 10: Conclusion
Afterword
TABLE: SUMMARY OF FINDINGS
BIBLIOGRAPHY

SPECIAL FIGURES & TEXTBOXES: The Zodiac ~4000 years ago- at Equinoxes in Spring & Fall; For each letter: KSAV IVRI- כתב עִבְרִי & Ksav Ashuris versions, Ugaritic Cuneiform, Modern Samaritan & other examples where applicable; A Bactrian[2hump]Camel; The calendar of the Mabul – the flood in the time of Noah; Chinese-Pinyin; The Aleph–Bes & Numbers; PHONO-IDEOGRAPHIC WORDS; ON KSAV IVRI FROM THE ENCYCLOPEDIA TALMUDIT [IN HEBREW]

A. S. Adler 5783

LEARNING FROM THE KSAV IVRI- כתב עִבְרִי Aleph-Bes

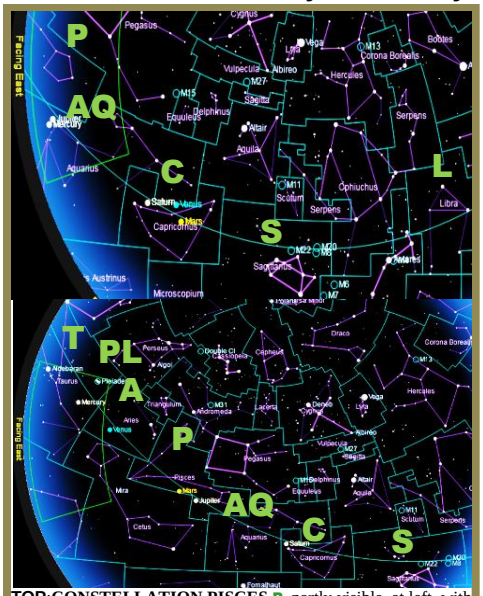
PART 1: INTRODUCTION – BACKGROUND & TIME FRAME

We've already seen[866] that the Aleph- א [867] isn't just a simple letter – like those in alphabets we may be more familiar with. The name of the letter itself has meaning. The 1st meaning is 'large cattle—as distinct from sheep and goats' [868]; a 2nd meaning is 'a thousand'[869]; a 3rd is 'a prince'.[870] What possible relationship is there between such different concepts? A prince – in the world of the creators of the Aleph-Bes -- is a person who has 1000 large cattle.[871, 889]

We've also shown this letter may have been chosen as 1st letter of the Aleph-Bes from its similarity to the constellation Taurus.[872] That constellation – resembling a long horned bovine – rose with the sun in the month of Nissan – near the Spring Equinox[873] – about four millenia ago.[648] This is the time of the Biblical Noah,[874-A] Shem, Ever, the Dispersion[874-B] and Avroham Avinu.[874-C]

Here we'll begin to explore the character of each letter – including how the letter got its name, its shape and its sequential position in the Aleph-Bes.[875]

A first assumption – based on a preliminary examination of the letters – is that the Alpeh-Bes wasn't created to make inscriptions in tombs or keep business records for city–states or empires.[876] It was created by people who were primarily pastoralists – shepherds and herders – to record what was important to them.[877] It was made to be easily learned by adults and taught to young children – not for a guild of specialists employed by landed kings. It was also created to be inscribed on a very portable material the pastoralist had readily at hand. It was designed to be written in durable ink on the treated skins of the animals they controlled.[878, 879, 1004]



TOP:CONSTELLATION PISCES P, partly visible, at left, with Capricorn C, Sagitarius S & Libra L before dawn, 5782, ['22]at spring equinox. BOTTOM: CONSTELLATION TAURUS T, on left, mostly visible- & Pleiades, PL; Aries, A;Pisces, P;Aquarius AQ; C, S & L as they were before dawn ~4K yrs ago. See footnote 873-A. This back-projection was simulated by advancing the date from the spring equinox to May & doesn't incl. some details that would improve accuracy. Top fig. has constellations ~2× size as bottom figure – as can be judged by the distances between P & AQ in the 2 figs. See footnote 873-C

Its durability would be based not on the hardness and resistance to decay of rock or clay, but on the transmission from generation to generation with precise, conscientious copying and recopying of what was written on carefully protected - but relatively impermanent - scrolls.[880, 881, 882]

We learn that Adam[883] named the animals[884] but does this mean he or his descendants couldn't improve on those names? Though Adam's son, Able, was 'a keeper of sheep',[885,886] it wasn't until 5 generations later that we have '...Jabal...father of those who dwell in tents and have cattle.'[887]

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[866] See, in this sefer: HOW DID THE א ALEPH GET ITS NAME?

[867] In fig. p225, precursors of Aleph: #'s 3,4 & 6- are ~front views ~like constellation Taurus; the hieroglyphs, #'s 7 & 8 are side views. Peter T. DANIELS 2013

[868] Dev.7:13'...the increase of your cattle...: שְׁגַר־אֲלָפֶיךָ ...עַל הָאֲדָמָה אֲשֶׁר־נִשְׁבַּע לַאֲבֹתֶיךָ לָתֶת לָךְ ..." See also for this use: Dev. 28:4,18,51; Is.30:24; Ps. 8:8; Prov. 14:4

[869] Br.20:16 '...I have given your brother a thousand pieces of silver... הִנֵּה נָתַתִּי אֶלֶף כֶּסֶף לְאָחִיךָ

[870] אֵלֶּה אַלּוּפֵי בְנֵי־עֵשָׂו בְּנֵי אֱלִיפַז בְּכוֹר עֵשָׂו אַלּוּף תֵּימָן אַלּוּף אוֹמָר צְפוֹ אַלּוּף קְנַז: אַלּוּף Br.36:15 "...sons of Eliphaz the firstborn *son* of Esau duke Teman, duke Omar..."

[871] There are also meanings assoc. with 'to learn"-maybe based on 'herd effect'of repetition: Prov.22:25 'Lest thou *learn* his ways... פֶּן־תֶּאֱלַף אָרְחֹתָיו וְלָקַחְתָּ מוֹקֵשׁ לְנַפְשֶׁךָ: '; Job 15:5"...*teaches* your mouth...: כִּי יְאַלֵּף עֲוֹנְךָ פִּיךָ וַתִּבְחַר לְשׁוֹן עָרוּמִים: ; Job 33:33 "... I shall *teach* thee wisdom. :אם־אין אַתָּה שְׁמַע־לִי הַחֲרֵשׁ וַאֲאַלֶּפְךָ חָכְמָה"

[872] Names of constellations aren't arbitrary or based on obvious images but on what was important to those who named them. There's no obvious picture of an ox in the sky – until it's pointed out. The ox was very important in pastoral & agricultural societies in Avroham Avinu's Age – for pulling wagons, milk, meat, hair, horn, leather & ploughing, turning grinding mills-- & the spring equinox was also important. Using the ox to mark a key celestial clock time was no accident.

[873] A. Taurus 'seen' just before sunrise at equinox is ~1.2k yrs before time when sun is centered on 'whole bull' at equinox & ~.7k yrs before time when sun is centered on 'head of bull' at equinox. From tip of its extended horn to its back end, it's ~130 min.[2hr,10min] wide, E-W;horn tip to end of its mouth –like Ksav Ivri aleph- its ~1hr 20min wide.TAURUS B. Dev. 16:1 'Observe the month of Aviv... שָׁמוֹר אֶת־חֹדֶשׁ הָאָבִיב וְעָשִׂיתָ פֶּסַח לַיהוָה " See T. Bavli, Sanhedrin 11b on when 2nd month of Adar may be added. 1 of the 3 criteria is when 16 Nissan- ~a day after the-month's full moon- would fall after the Spring Equinox. see Footnote 888-B-C ON ANCIENT SEMITIC CALENDARS; C. K.SPENCE, 2000; SKY AND TELESCOPE; Use skypro 6 for accurate images. See NASA for these factors:

[874] See, in this sefer: A. FROM THE MOUNTAINS OF ARARAT TO THE TOP OF PISGAH: A CLOSER LOOK AT THE MABUL.. B. THE MIGDOL BAVEL OR 'TOWER OF BABYLON' THE 70 LANGUAGES & A POSSIBLE "HIDDEN MITZVAH" TO CREATE A "CENSORSHIP RESISTANT" INFORMATION ENVIRONMENT. C. COUNT THE STARS...

[875] Studies that seek to show the Aleph-Bes arose from pre-existing Egyptian hieroglyphs don't explain the letter order or why Aleph is 1st. There was no camel hieroglyph 3K+yrs ago—none is shown in the 'GARDINER List'.

[876] In contrast:"It is obvious from Hamilton's work that the pictorial alphabet was not dreamed up by some shepherd sittingon a rock."P83,col.2, A.F.RAINEY,2009. We will show here that it was likely invented by Shepherd-Merchant-Chachamim.

[877] It wasn't only these pastoralists who wrote on animal skins. City state scribes apparently did also:Persian King Darius I דָּרְיָוֶשׁ [see Ezra 6.1]; in Behistun inscription, ~ "Proclaims Darius, the king: By the favor of Auramazdā this text which I made, besides (being) in Aryan, both on clay tablets and on parchment it was placed ...And it was written down and was read aloud before me. Afterwards I sent this text everywhere into the countries." Hassan Rezai BAGHBIDI, 2009

[878] A. G.KHAN, 2013,BRILL B. A.PERROT & M. RICHELLE. 2022, [has many variants of Ksav Ivri from Dead Sea Scrolls]Give additional details of these 4 examples. C. ON PHRYGIAN, see, B.O.CURSACH, 2018 D. SAMARITAN UNICODE Get a Samaritan Aleph-Bes that does not violate Unicode and is preferably from the time of Chazal; J.DUSEK 2020, 2018 E. The Elephantine Papyri in English, Bezalel PORTEN, Brill 1996, plate 2, Document B-36 Aramaic Document of Wifehood, Engl. trans. p.208-11. F. SAMARITAN PENTATEUCH COMPLETE, 1225CE G. 1. W.R. TAYLOR & W. F. ALBRIGHT, 1941 2. J. D. PURVIS, 1976 H. A. WILLI, 2008,

[879] "Understandably archeological traces left by caravans in transit and mobile camel pastoralists are not necessarily lush nor easily detectable in the landscape." P 308. M. HEIDE & J.PETERS, 2021. see also K. ABDI, 2003; R. BERTHON,2020

[880] Discuss:T.Bav.Shab104aThe Sages said to R. Yehoshua b. Levi: Young students came today to the study hall and said things the likes of which were not said even in the days of Joshua bin Nun.[why from this time?]" Alef bet means learn [elaf] the wisdom [bina] of the Torah.] Gimmel dalet means give to the poor [gemol dalim]. Why is the leg of the gimmel extended toward the dalet? Because it is the manner of one who bestows loving-kindness to pursue the poor." [Koren Transl.] Aleph-Bes of Rabbi Akiva https://www.yutorah.org/_cdn/_materials/Rabbi-Akiva-553281.pdf

[881] There is reason to believe that a completely different alphabet was developed in Egypt 3200+ yrs ago. Its 1st letter was h -for the Egyptian name of the Ibis –the symbol of wisdom in ancient Egypt. See, John RAY, 2011.

[882] See, in this sefer: FROM THE DUST OF THE EARTH...

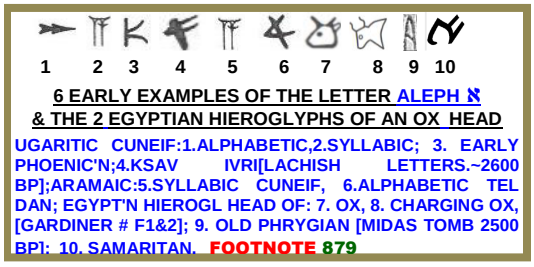
[883] Br.2:19-20:"...whatsoever Adam called every living creature, that *was* the name thereof. ...וַיָּבֵא אֶל־הָאָדָם לִרְאוֹת מַה־יִּקְרָא־לוֹ וְכֹל אֲשֶׁר יִקְרָא־לוֹ הָאָדָם נֶפֶשׁ חַיָּה הוּא שְׁמוֹ: וַיִּקְרָא הָאָדָם שֵׁמוֹת לְכָל־הַבְּהֵמָה וּלְעוֹף הַשָּׁמַיִם וּלְכֹל חַיַּת הַשָּׂדֶה..."

[884] Br.4:2'...and Abel was a keeper of sheep ... וַתֹּסֶף לָלֶדֶת אֶת־אָחִיו אֶת־הָבֶל וַיְהִי־הֶבֶל רֹעֵה צֹאן"

[885] "Old Babylonian texts from the first half of the 2nd millennium BC dealing with trade often suggest that Mesopotamia is the land of wool. For scholars who travelled in this area from the middle of the 19th century, it is easy to understand why. The environment allows people to observe numerous herds of sheep grazing in the steppe or desert areas surrounding the Mesopotamian plain. " Catherine BRENIQUET & Cécile MICHEL, pp.1-11, 2014

[886] Br.4:20 וְתַלֶּד עָדָה אֶת־יָבָל הוּא הָיָה אֲבִי יֹשֵׁב אֹהֶל וּמִקְנֶה: See also footnote 31-B "Noah...invented the plough"

We might imagine the original name of each animal was based in some significant measure on the sounds associated with it. Additional specificity might have been handled by simple gestures or pantomime. To save time and reduce the need for hand gestures – when one's hands might be full – other related sounds were added. As more was learned about the animal and/or as the field of 'two-sound' words became crowded, a third sound might be added to the animal's name.



6 EARLY EXAMPLES OF THE LETTER ALEPH א & THE 2 EGYPTIAN HIEROGLYPHS OF AN OX HEAD

UGARITIC CUNEIF:1.ALPHABETIC,2.SYLLABIC; 3. EARLY PHOENIC'N;4.KSAV IVRI[LACHISH LETTERS.~2600 BP];ARAMAIC:5.SYLLABIC CUNEIF, 6.ALPHABETIC TEL DAN; EGYPT'N HIEROGL HEAD OF: 7. OX, 8. CHARGING OX, [GARDINER # F1&2]; 9. OLD PHRYGIAN [MIDAS TOMB 2500 BP]; 10. SAMARITAN. FOOTNOTE 879

PART 2: THE 22 LETTERS

Since א–Aleph- is the first letter of the Aleph-Bes [888,896] and its first meaning was most likely large cattle[889] - as opposed to sheep and goats – let's see how this hypothetical, stepwise naming process may have led to the name Aleph with its spelling: Aleph-Lamed-Fe- אלף.

Cattle make a variety of sounds.[890] Which were most identified with cattle in Ancient Mesopotamia isn't known. We'll assume, for the sake of this demonstration, that the most distinguishing sound was the sound of them as they're usually found -- in a herd. This is a range of mostly lower frequency vowels - like "oo" and "aw". Such sounds-- plus a pantomime of horns and size[891] -- would get the message across.

Once the cattle were domesticated, another sound would be added to the first. The letter Lamed-ל depicts a shepherd's staff. It's used to guide cattle and sheep to or from food and water – a key sign of domestication. The sound for indicating this was like the initial sound of the Lamed –which is a prefix, meaning "To" in Hebrew.[892]

When other words with different but related meanings developed, another sound was added to make it clear which 'al-אל' was meant.[893] Adding a פ – with a sound emphasizing the lips – and referring to the mouth and face, told us that this was something that responded to our voice—in ploughing and wagon pulling[894] – provided food—milk and meat- and even gave us a horn to blow.

א-Aleph is the 1st of 11 single letter affixes. At the head of the Aleph-Bes, it means, appropriately enough: 'I will'.[896]

The 2nd letter is Bes ב [895]—which is easier to explain- at least in some respects – than Aleph. It's the 2nd of 11 single letter 'affixes'[896] - and means 'in'. The name of the letter is also easier – it means 'house'.

Why is it the 2nd letter? Maybe, because the key element of a house – as opposed to a shed or small tent – is that it's a home for a married couple.[897] Married couples – like Adam & Chava --may also have been the most important twosome at that time. Another pair associated with a house – is: inside & outside. There's a 3rd pair that's reflected in the shape of the original letter- see # 3, 4 & 6, at right. Within the home or tent there is a public area & a private area - for the women. When people came to visit who were not members of the immediate family, they'd only be in the public area. So we have 3 twosomes associated with a house – which children can easily appreciate. These twosomes give Bes both its 2nd place in the order of the Aleph-Bes and its distinctive, original Ksav Ivri letter shape.

7 EARLY EXAMPLES OF BES ב

UGARITIC:CUNEIF.[1.ALPHABETIC, 2. SYLLABIC];3.EARLY PHOENICIAN;4.KSAV IVRI [LATE 1ST TEMPLE]; 5. CUNEIF. ARAMAIC; 6. TEL DAN [EARLY 1ST TEMPLE] KSAV IVRI; 7. R→L PHRYGIAN; SAMARITAN.

SEE FOOTNOTE 879

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[888] A.1Tho' the Aleph-Bes order & names of the letters appear to have some variability, in all these cases, Aleph is 1st. On variability, see:A.DEMSKY,2015 He suggests 22-letter order is based on a mnemonic song of 5 groups of sequential, semantically related characters that helped students quickly memorize the abecedary. :a) Homestead (*alef* to *waw*); b)Field(*zayin* to *ṭeṭ*); c) Hand (*yod* to *lamed*); d) Water(*mem* to *samekh*); e) Parts of the head(*'ayin* to *tav*).A.2.. for much earlier & detailed version of this & origin of Aleph-Bes: J.EVANS,1872, p 9-10, etc. A.3..J.NAVEH,1978 has an analysis showing an unusual abecedary was written by someone who didn't know how to write several of the letters, mixed them up & left out at least one – mem. B.1 p6."The ancient Hebrews recognized the significance of this cycle,[of sun seasons & stars]referring to the equinoxes, the times when the year turns, as Tqufat hassana(Ex.34:22):"You shall observe …the Feast of Ingathering at the turn of the year" "An analysis of each city's calendar, beginning with sites from the 3rd millennium[BCE], provides mounting evidence of an almost total adherence to a spring New Year throughout Mesopotamia."p15,COHEN,1993 B.2. "During the middle of the 3rd millennium B.C., an early Semitic calendar was in use across much of northern & central Mesopotamia, being attested on tablets from Ebla, Mari, Gasur…. Pettinato has labeled this calendar the 'Semitic calendar of the third millennium*, stating "this designation took rise from the names of the months which are Semitic & for the most part West Semitic, & from the diffusion of this calendar throughout the whole Near East during the period from circa 2600 to 2200 B.C."p8;COHEN,'93 B.3 "… Early Semitic calendar month names do not contain theophoric elements, but rather are agricultural in nature (with month names meaning "Sheep," "Plowing," or "Ghee"[clarified butter])…which enabled this … calendar to be somewhat universal…." COHEN,1993..C.. W.SALLABERGER,2021 "…the accounts for the plucking of sheep all date to one specific month, the month of the Sun-god (month a,Table 4), which therefore must refer to the 1st month of the standard Mesopotamian year, corresponding more or less to the time of April."..D.. It may be there was also a calendar based on numbered months –[no names] – as in the Mabul chronology which includes 4 numbered months:# 1,2,7 & 10. This may have involved some confusion – when months were intercalated. See footnote 927 & text box, p. 229.

[889] E.KLEIN,1987, derives the whole set of meanings associated with this letter opposite from what is shown here: "אלף a base prob. meaning orig. 'to be linked together, be connected', Akkadian *ulapu* (=band), *elippu* (= ship).

[890] P.F. LEE, 1990, A.J.CAVEN, et al (2021)

[891] On role of gestures in speech development see: Michael C. CORBALLIS, 1999.

[892] It may be an example of a special kind onomatopoeia. In one of the ways to make this sound, the tongue is pointed forward & forcefully pressed against the front teeth – thus in the direction of the object that one would point a finger at. The T, D & TH [as in THE] sounds involve a similar forward oriented process & in different languages have similar meanings: e.g. English:"To".[see examples in Yisroel WEIL]. See website: https://ideophone.org/three-misconceptions-about-ideophones/

[893] The most common meaning of 'al'- אל in Biblical Hebrew is "no" suggesting the way a pastoralist's crook stops an animal. "Lo"- לא with the same 2 letters in reverse order – means the same thing. Why?

[894] D. FORD, L. KREUTZER, 2015

[895] This letter has 2 written forms & each has a different pronunciation. The 1st form in Aleph-Bes order -which is also used in pronouncing the name of the letter - has a dot or 'degesh' in it – or in the case of Shin, on the letter's upper right. 1st we'll discuss these '1st/name forms': ב ג ד כ פ ת & ש

[896] Other affixes, in Aleph-Bes order: Aleph:~100X in Bireshis alone: Br.2:18 'I will make-אֶֽעֱשֶׂה־לּוֹ עֵ֖זֶר כְּנֶגְדּֽוֹ';Br.12:1'…to the land that I will show you-אֶל־הָאָ֖רֶץ אֲשֶׁ֥ר אַרְאֶֽךָּ';Br.13:9'…then I will go to the right…וְאֵימְנָ֖ה…' [aleph:first & future & one=singular, see Tof,];see note 1106 on Aramaic; He– feminine identifier, 'the' & other meanings; Vov-'and'; Yud- feminine[+other meanings?]; Chof– 'similar to' [+other meanings?]; Lamed–'to'; Mem-'from'; Nun–feminine, fecundity, plurality; Shin-'that'; Sof–last & past tense:suffix, future tense:prefix[+other meanings?].These affixes are one letter phono-ideo-graphs.See ADDENDUM A : PHONO-IDEOGRAPHIC WORDS

[897] 1st use in Tenach is 'inside' - as opposed to outside- of a shelter:
עֲשֵׂה לְךָ֥ תֵּבַ֖ת עֲצֵי־גֹ֑פֶר קִנִּ֤ים תַּעֲשֶׂה֙ אֶת־הַתֵּבָ֔ה וְכָפַרְתָּ֥ אֹתָ֛הּ מִבַּ֥יִת וּמִח֖וּץ בַּכֹּֽפֶר׃ Br 6:14.
2nd use -- in the same context—is a family :Br. 7:1
' …"Go into the ark, with all your household… וַיֹּ֤אמֶר יְהוָה֙ לְנֹ֔חַ בֹּֽא־אַתָּ֥ה וְכָל־בֵּיתְךָ֖ אֶל־הַתֵּבָ֑ה…'

Why does it have the sound "B"? Maybe it is related to the sound of a door – of a house, not a tent- closing – as heard from inside.[898] The same sound of a closing door heard from inside will be different from what is heard outside – because of the echo effects of the interior.

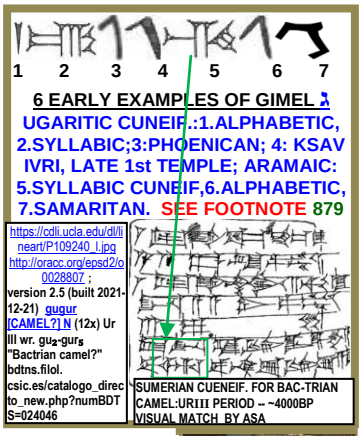
Why is the name Bes and not just, e.g., "Bu"? The home of the couple is not just a place that we can go in and out of. It is the most common destination of those who aren't already in it. The letter Sof - ת – from its position at the end of the Aleph-Bes and in its meaning: "a sign or target" – denotes a destination.

The 3rd letter is Gimel ג [895] - and may be easier to "explain" than the first two. It means camel.[899] They don't usually travel in large noisy herds – like cattle. Their most distinguishing sound is a growl/grunt: *Gheh.*[900] When the this field of sounds became crowded – & people became more familiar with camels – including their prodigious water-drinking abilities[901] – an 'M' sound –onomatopoeia for drinking -- was added. The word גם was created.

When this 2-letter field also became crowded -and camels were domesticated –the lomed-ל – for domestication – was added. So we arrived at our word גמל for both the animal and the name of the 3rd letter, Gimel: ג. The old word for camel, גם came to mean 'also' –as one hump– of a 2 humped camel- follows another.[902]

Why was it placed 3rd? The 2 humped 'Bactrian' camel – [903] – has a (head+neck) & 2 humps. The 3 are of similar size & shape – & may've been the most outstanding example of 'three-ness' in everyday life.

The shape of the Ksav Ivri letter clearly reminds us of the head and neck of a camel[904] – once it's pointed out. What advantage was there in a shape that does not - on its own - remind one of a camel? First, if shaped like the camel's profile at left, it would resemble Mem– מ - water: 〰, 𐤌 - with 3 waves. It may also be a case like Kuf ק - which we'll see when we get to that letter, appears designed to show where the sound was made: at the back of the throat.[905, 906]



If we can find the time range for first use of domesticated Bactrian camels by pastoralists of upper Mesopotamia, we'd have another sign of when the Aleph-Bes -in close to its present form and order- was established.[907,908,966]

Both Ksav Ashuris and Ksav Ivri gimels - have something in common that distinguishes them both from the

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[898] See? Yisroel [Israel] WEIL, 2022
1st use that probably means a physical house & not a tent is: Br. 12:15 "…the woman was taken into Pharaoh's house.--וַתֻּקַּח הָאִשָּׁה בֵּית פַּרְעֹה: ...
1ST use that clearly means a house – with strong walls & door : Br. 19:2 "…turn aside to your servant's house….וַיֹּאמֶר הִנֶּה־נָּא אֲדֹנַי סוּרוּ נָא אֶל־בֵּית עַבְדְּכֶם "

[899] See, in this sefer: GEMILUS CHASADIM – "CAMEL KINDNESS" II GATEWAY TO LIFE SCIENCES & SUSTAINABILITY

[900] A. # p, 2 I.A. VOLODIN, et al, 2022 Prof. Volodin wrote [email to A.S.A 8/18/'22]: "We found …calls of Bactrian camels… [which] can be interpreted as growls, grunts and trumpets. In captivity, the Bactrian camels are commonly silent. Calls are mostly produced during the rut…and during different discomfort situations, which keepers try fast prevent….[sent to ASA separately/no link] were produced by an adult female with young who, by any reason wanted very much to go to indoor enclosure."B. It appears that the Camel is quiet in captivity – in zoos -- when unstressed – physically or hormonally. It makes its distinctive grunt when it is getting up under a load or walking up hill in a caravan: 1. "You may annoy and disturb him, and even make him grunt"p.49; 2. "the younger the camel the noisier…He will continue grunting until you have mounted and got some little distance on your way, when he will cease, but not altogether, breaking out occasionally, especially when you want him to go a bit faster. p.55; 3. The older the camel, the quieter and more amenable he is, either giving a gentle grunt of dissent or, if well trained, more frequently remaining quite silent,p55 4. "...he will go so far as to eat bread out of your hand, and perhaps give you a low grunt of recognition when you come near him..."p.58; 5. "...young camel...in its wailing grunt..."p.58; A.G.LEONARD,1894. 6. "…although the camels sank hock deep into loose powdery sand, they struggled on,…grunting when the uphill going was difficult…" J. HARE, 2002; 7. Link to camel sounds considered reliable by expert A. JEMMETT, pers. com. 8/16/'22

[901] B.A.Z. YAM & M. KHOMEIRI, 2015; p.193,Table 4, Bodil SCHMIDT-NIELSEN, et al, 1956 : experiment in 1954 inSahara Desert, oasis Beni Abbes, S. Algeria- (2°W, 30°N), natural male, dromedary, 7 yrs old, 479kg, 'closely sheared' of its 'naturally wooly coat' at start of experiment, went 7-8days of no water-[but with dried dates &hay],in 3 episodes starting Jn 5, ending Jl 4. After ea. episode, lost 103-122kg; drank 103-104kg H_2O in '~10 min.' having lost, before drinking 28.1-31.8% of their body wt in ea. of 3 dehydrations. [rehydr. Wt. loss=24kg in ~30 days,calc by ASA]

[902] The purpose of this type of association is to facilitate learning – pedagogic & mnemonic – not to show a unique relationship.

[903] Climate in Bactria was more hospitable 3.2-4.5Kyrs ago than now...[with]... rich pastureland…an important step on theSilk Road.'S.LEROY...2021; É.LUNEAU, 2019

[904] Some say it reminds us of camel hump[p.165 M.DUNAND, 1945. But this wouldn't apply to 2 humped camels. Maybe 'throw-stick', cited at 907[c]&[d], below, comes from camel—as it's likened to a rainbow- not vice-versa. But the 'curved staff' is from URIII [4K+BP] while 'camel' comes from Neo Assyrian- ≤ 3KBP]See: col. 2,#4',pdf 48 & col 2 pdf p 49; see also:'gamalu':kindness,pdf 35;Old Akkadian [4K+ BP] & 'gamaru'[to end] 3.6-3.2KBCE, pdf 38.[of 172]A.OPPENHEIM, 1956. See: *lambdacism &rhoticism*: defective pronunciation of L & R, incl. switching betw'n them- may account for relations between *gamal* & *gamar*. No 'throw-stick' in TeNaCh. Maybe camels didn't taken through swamps– like those of Ur? Eblaite vocab. not in CAD? Pastoralist & Urban vocab. were different? 1st use of 'camel' in Tenach: Br.12:16 וּלְאַבְרָם הֵיטִיב בַּעֲבוּרָהּ וַיְהִי־לוֹ צֹאן־וּבָקָר וַחֲמֹרִים וַעֲבָדִים וּשְׁפָחֹת וַאֲתֹנֹת וּגְמַלִּים: 'And he entreated Abram well for her sake: and he had sheepand oxen… and camels.' Camels are the last of 7 types of possessions. Rashi says these were presents from Pharoah. But it is 'he had', not 'he gave'- suggesting that at least some of these – like the last named camels - were already owned by Avroham. Source of Rashi's comment not yet known. Comp. Br.20:14 Avimelech "gave"

[905] In Korean Hangul alphabet – K & G are from same basic letter shape -like Ksav-Ivri gimel. Hangul letters show how the sound is made – where put tongue in the mouth. If these Ksav Ivri letters were designed with this intention, they may be 1st such letters – 3k+ yrs before Hangul- & a 1k+ yrs before the Brahmi.[962]

[906] The ksav Ashuris – round – SOMECH ס- may also have been designed on this principle – see footnote 953

[907] See:A. M.HEIDE &J.PETERS, 2021, p.66, par3,"…there are good reasons to maintain that the Bactrian camel reached Mesop. Before…[2000]BC through trade relations with Iran and with the Oxus Civilization…"B. W.HOROWITZ, 2014.C. R.SATAEV et al 2022.

[908] There is a sharp contrast between what we've shown here for the 1st 3 letters- & what's widely- but not universally[a]- accepted as true among academics[b1] . They saw no pictures or hieroglyphs of camels in Egypt from 3.5-4+K yrs ago– & no word for camel in ancient Egyptian.[c] They also found short, informal, pictographic, letter-like inscriptions in Egypt from the 'no camels in Egypt' era. Some resemble Ksav Ivri enough that they thought they'd found the origin of the alephbes. None resembled Gimel.[b2] For Gimel, they felt the Ksav Ivri letter couldn't be depicting a camel because there were none around in that time & place.The hieroglyph that looked most like Ksav Ivri Gimel was ga , throw-stick [d1]. At [d1], it appears to be pron. 'ga'- another source has ʿmʿʒt ḳmʒ, nḥsy, ṯḥnw [d2] Since there is an Akkadian word for throw-stick- gamlu [e]-they assumed Semites working in Egypt understood that hieroglyph & used it for the initial "G" sound in what became Gimel. All Ksav Ivri inscriptions found thus far show the top portion of the letter bent at least slightly down – like a camels head & neck—compared to the upward pointing top-section of the 'throw stick' it's said to resemble. We shouldn't be surprised if pictographic letters developed independently in different cultures resemble each other if they depict comon objects:eg. 'head' or 'eye'.[a]M.DUNAND,1945;PDFP.156,I.J.GELB,1963;[b1]A.H.GARDINER,1916;G.HAMILTON,2006;O.GOLD-WASSER,2011;B.E.COLLESS,2014;A.M.WILSON WRIGHT, 2019;G.L.COHEN,2021;[b2]G.HAMILTON,'06,P55][c]A.H.GARDINER,list of hieroglyphs, categ.XIX 'Weapons and arms'#1&2 of 47 items under this heading. For current rev., showing camels were in Egypt, see,M.RIPINSKY,1985; A.S. SABER,1998;[d1]E.A.W.BUDGE,1920,v.2,p.800,See Pdf138 of 749pdfv.1; [d2]WIKI THROWSTICK;[e]p89, pdf 58, J.BLACK, A.GEORGE, N.POSTGATE, 2000

Ugaritic and Aramaic syllabic: neither of the former look much like a camel. It may be that the three 'animal letters', א, ג and נ were designed to be reminiscent of the animal they represented but not its actual image. This would avoid the appearance of idol worship in the letters. The Aleph- horned cattle- has the head and horns—and resembles the head of constellation Taurus; the Gimel – has the camel's distinctive head and neck; and the fish – Nun – as we'll see, has the head and open mouth of a fish – being yanked from the water on a fish hook. None of the heads have eyes. This apparent avoidance of idol worship in the letters is consistent with the avoidance of idol worship in the month names that prevailed in a widespread Semitic calendar in N.W. Mesopotamia in that time frame. [888-D]

The 4th letter is Daleth ד.[895] It means 'Door'. The 1st sound - "D"- may've been associated with the sound—heard from outside- of a wooden door closing: Dh.[909] The 2nd sound -- again from the letter Lamed ל, may be associated with the control function of a door. The 3rd sound ת – like its counterpart in Bes ב—may be associated with the door as a destination. It's also the part of the destination first encountered.

Why is it the 4th letter? With its 4 sides – left, right, top and bottom – it is perhaps the most common example of 4 in an inanimate object. Its appearance in Ksav Ivri is usually an ~equilateral triangle resting on its base. This is not to suggest that doors were originally triangular – like the entrances to some teepees. Doors to tents and buildings in the context of the Aleph-Bes were usually rectangular—like the opening to the Mishkan[910] and entrances of Bedouin tents. The entrance to a tent was called an "opening פֶּתַח" and not a door or door-way. The term door-דֶּלֶת refers to the moving part – and not the opening.[911] Just as the deltoid Daleth was reduced to two strokes in Ksav Ashuris, the rectangular shape was reduced to a triangle. The trapezoidal Samaritan form: #8, may not be a return to an original shape or distinct Ksav Lebanon style, but an elaboration of the Ksav Ivri—like their addition of 2 extensions on top & bottom.[912, 913]

6 EARLY EXAMPLES OF DALETH ד
UGARITIC-CUNEIF:1. ALPHABET.,2.SYLLAB.; 3. EARLY PHOENICIAN; 4. KSAV IVRI [LATE 1st TEMPLE]; 5.CUNEIF. ARAMAIC;6.TEL DAN [EARLY 1ST TEMPLE] KSAV IVRI;7. ARAMAIC: 8.SAMARITAN. SEE FOOTNOTE 879

The 5th letter is Heh [also He or Hei] ה. In Ksav Ivri,[914] it looks like a 3-pronged comb for combing wool[915] - with a 'thumb' – handle -- extending from the part to which the prongs are attached. It resembles Sumerian ideogram ZATU 719: #7, meaning 'wool-combing'.[916]

6 EARLY EXAMPLES OF LETTER ה
UGARITIC:CUNEIF.[1.ALPH.,2.SYL.];3. EARLY PHOENIC.;4. KSAV IVRI [LATE 1st TEMPLE]; 5. ASHURIS [ELEPHANTINE]~2450 BP; 6. OLD-PHRYGIAN, 2400-2800 BP; 7. SUMERIAN; 8. SAMARITAN. SEE FOOTNOTE 879

"Although wool can be spun immediately after being removed from an animal,[917] it is usually first combed…. combing …enable[s] impurities to be released, fibres to be disentangled and re-aligned in parallel, which in turn allows for the subsequent spinning…. ...it is usually washed before spinning both to remove impurities… and if it must be dyed before the spinning process. …wool dyes thoroughly and easily, and is also naturally available in different colours." [918, 919]

As a prefix, Heh-ה means 'the' as in the expression "They live in the house" -not the tent, the cave or the tree in the same line of sight. In this sense it functions like the comb that separates the desirable from the undesirable –as the wool is separated from the twigs and dirt. Because this work was usually done by women[920] ה became an affix for designating feminine gender.

The sound of this letter is soft- like the noise produced by combing wool – as the prongs pass through the mass of fiber.[921] The position in the Aleph-Bes is connected to the appearance and the use of a 5 fingered hand –for combing- and of the original Heh – which – like #6- may have had 4 fingers and a thumb.

The 6th letter is Vov ו. It means & resembles a hook[922] – the kind that would pass through 2 holes or loops to join

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[909] See distinction from same sound heard from inside at 'Bes', supra. Daleth also has a 2nd sound – as it –& 5 other letters - the BeGeDCeFeT - ב ג ד כ פ ת group - each have 2 sounds. The 1st sound- in the order of the Aleph Bes- has, as shown, a *degesh kal* – a dot inside the letter. This, for each of the 6 letters, is a 'plosive'. The 2nd, without a dot, is a 'fricative' with the tongue in the same position. Some say, for ד, this yields a voiced *th* – like *th* in 'the'. If the tongue is in the same position, it actually yields a *zh* like sound. This may be the custom of some French Sephardim. When these letters appear at the beginning of a word, they're 'plosive'– even without nikudos – dots or other Masoretic vowel signs. Prolongation of ד in 'one-אחד' in Shema[Dev6:4] is noted in Talmud Bavli [Berachos 13b[2]].

[910] Shem.40:6 "…before the door of the tabernacle…: מִזְבַּח הָעֹלָה לִפְנֵי פֶּתַח מִשְׁכַּן אֹהֶל־מוֹעֵד ..."

[911] The contrast can be seen where Lot is trying to protect his guests: Br.19:6:
'…Lot went out at the door…& shut the door after him…: וַיֵּצֵא אֲלֵהֶם לוֹט הַפֶּתְחָה וְהַדֶּלֶת סָגַר אַחֲרָיו:

[912] Samaritan paleography:shape of letters in Chazal's time? Hila DAYFANI, 2018; Boaz ZISSU and Omri ABADI, 2014, Dan BARAG, 2009, p 319, "The use of palaeo-Hebrew for writing copies of the Pentateuch in the third century CE, as mentioned in the Babylonian Talmud, and the roots of the Samaritan alphabet in the palaeo-Hebrew script, led in the fourth century to the conscientious creation of a related but different alphabet which shows very little change over sixteen centuries after its emergence"

[913] A. Rav Chama bar Guria said in the name of Rav: The Laws of Chol-HaMoed are like the laws of the Cutheans [another name for Samaritans] with regard to deciding Halacha"Moed Katan 12a6, Schot. note 46. "The Cutheans were a pagan group imported by the Syrian Emperor Shalmenasser from their native Cutha and from other areas. [2Kings 17:24]Those commandments that the Cutheans did observe, they observed more meticulously than even full-fledged Jews... Concerning those that they did not observe, they could not be trusted. The Gemora in Chulin states that their observance followed no rule. B. L.H.SCHIFFMAN, 1985

[914] For more on Ksav Ivri, see Tr.Megil,Jer.Talm,12a,Ch1,Hal.9; Jer.Talm, Sotah,Ch 7 Halacha 2, 32b[1] includes layout of ksav Ivri – same as in Megilla; Also:Talm. Bav. Sanh 21b[4]; Eliezer b. Yaakov & Rashi say at Zev.62a[2]: Torah originally given in Ksav Ivri. See Addendum C: ENCYCLOPEDIA TALMUDIT on Ksav Ivri

[915] "Woolen textile product'n followed that of linen by at least several k yrs" (RYDER 1984; BARBER 1991: p68, 211. Maybe for combing flax? Joy McCORRISTON, 1997

[916] A. A computer search of an online Akkadian language dictionary produced a whole family of words: ḫalāṣu: to comb out, to remove by coming; ḫāliṣtu: a female wool-comber; ḫalṣu: combed, filtered; ḫalṣu:(flax) combed/dientangled; ḫilṣu: combed out wool. https://www.assyrianlanguages.org/akkadian/dosearch.php B. A computer search for comb in cuneiform Akkadian with the above meanings found nothing! https://cdli.ucla.edu/dl/photo/P258846.jpg C. A computer search for 'comb' in Ernest KLEIN,1987, found no words related to comb beginning with Heh-ה – except the definite article – which we'll see on next p. D. Petr CHARVÁT, '14,

[917] The sheep were sometimes washed in a stream before being plucked. This would remove most ordinary dirt – but would not remove any significant part of the wool grease – lanolin. P.238, Cécile MICHEL, 2014 [see footnote 916]

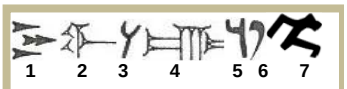
[918] P.20.C.PINAZZI-LUCCHESI,205 p.,2018,citing, for part on combing:GLEBA,M. 2008. p.98).

[919] Weighing might be done with assuming a certain amount of wool grease & fine dust --must be washed out. It would be easier to account for in pre-washed wool than very variable fraction of residual water after washing and drying.

[920] In a woman's dowry, wool combs differ from hair combs. S. DALLEY, 1980

[921] "This recording of Rough Fell [sheep wool] fibres was created by attaching contact microphones to wooden wool-combs. You can clearly hear the scratchy qualities of the fibres themselves, as they are combed." Sounds closer to ח or כ than ה –because of where & how mike is attached it may not sound like what one would hear. The sheep are native to Howgill fells, North England. F.FORD 2012

[922] The Academics [908] say it is from "mace head "! See G.HAMILTON p 86-92.



1 2 3 4 5 6 7

6 EARLY FORMS OF LETTER VOV וֹ

UGARITIC:CUNEIF.[1.ALPHABET.,2. SYLLABIC]; 3. EARLY PHOENICIAN; 4. ARAMAIC CUNEIF; 5. KSAV IVRI [LATE 1st TEMPLE]; 6.KSAV ASHUR.; 7. SAMARITAN. SEE FOOTNOTE 879

2 things together. Maybe its sound – produced in its 'name sound'[923] by pressing the lips together as a voiced bilabial fricative – suggests joining/ hooking things together. From that, its main meaning is 'and'. Why 6th? Perhaps to link/hook combed wool --sold by weight[924] – with the 7th letter – which apparently means a balance scale.

1 2 3 4 5 6 7 8

7 EARLY FORMS OF THE LETTER זׁ

UGAR.:CUNEIF.[1.ALPHAB.,2.SYLLA]; 3. EARLY PHOENICIAN; KSAV IVRI: 4. SILOAM; 5.LATE 1st TEMPLE; ARAMAIC: [6. CUNEIF., 7.KSAV IVRI]; 8. SAMARITAN. SEE FOOTNOTE 879

It's important to contrast #3 & #4, at right: #3 looks like a capital 'I'. It's one of 3 such letters in "the oldest witness to the Phoenician alphabet of considerable length discovered to date."[927-C] #4 is one of 4 such letters in the Siloam inscription. #3's shape has been adapted from the latter design & no longer looks like a balance scale. The priority in writing should clearly go to the Ksav Ivri.

The 7th letter is Zayin זׁ. In Ksav Ivri, it looks like --and is said to depict – a balance scale.[925, 926] Its low profile suggests a scale for heavy objects. Why is it the 7th letter? With the Vernal Equinox in Taurus – [the lunar month of Aviv/Nissan], the Fall Equinox – with the balance of day and night -- would be in the 7th lunar month – Ethanim/Tishrei.[927] In this way, the 1st & 7th letters would anchor the Aleph-Bes to the immutable stars—to Heaven- and to the natural yearly cycles of the world.[928] The constellation Libra- a balance scale- would be in the 7th lunar month if Taurus is in the 1st. However it is not clear that the "Libra" stars had this association in the time the Alpeh-Bes was first used by people.

Why is it called Zayin? Maybe it's related to "balance scales-מֹאזְנֵי"[Lv.19:3] which resemble a "pair of ears-אָזְנֵי" [Br:50.4]? At an early stage, it may have been called " Zny" and developed into the current name by metathesis.[929] Why should ears have such a name? This type of question is raised, below, for Yod י - finger.[942] Some say it comes from "to ponder- וְאָזַן"[Eccl. 12:9][930]. Where does the "Z" sound come from? Perhaps, from the sound of sawing wood to make the accurate parts of a heavy-duty balance scale? And why is it linked with "Nun נ" ? Perhaps the most common food that was sold by weight – and not by volume – was fish. Also, "Nun נ" – like fish – is associated with "many". Maybe related to זוּן "to feed-provide"? Analagous to salary – to weigh out salt?[931]

The 8th letter is Ches ח. In Ksav Ivri, it looks like part of a fence- particularly in Ugaritic. Since Ches is between Zayin- a letter meaning balance scales- and Tes, apparently meaning a ball of yarn, it may function, like the letter Vov, primarily as a connector. In this case, its connecting function is to represent a stage between the combed & weighed wool and the spun yarn. Since before the wool is spun into yarn it would be washed, dyed and dried, it may be that Ches represents a drying rack.[932] The drying rack could be composed of posts driven into the ground, combined with strong but light weight ropes stretched between them. Before being used to make drying racks, the posts and ropes- combined with netting[933]- could be used to make pens and sheds to hold the sheep for plucking.

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[923] It is also associated other sounds "oo" and "o" as in "role"and is sometimes prounced as a labio-dental voiced fricative.

[924] See:"Wool Economy…"916 for many ref's to wool sold by weight .

[925] #4:neatly carved in stone, 4×, ~2700BP;cursive script,6 straight lines, ea. letter uniformly written ~.5"ht; p52, col 2, par 6, WATERMAN, H. B. 1882. Probably written by snr engineer responsible for cutting .5+km Siloam tunnel [Hez. ,2Ki.20:20] through solid stone – starting at opposite ends. A. R.I.ALTMAN, 2007

[926] A. [Related to Biblical Aramaic בְּמאזַנַיָא Daniel 5:27], Ugaritic *mznm* (=balance, scales).from Sem. base אזן (=to weigh), p. 309, pdf p 325 E. KLEIN, 1987,. B. 'Akkadian had three words for balance …zibanitu. All…rare. The last of these is the designation of the constellation Libra in Akkadian.' p139: V. BARTASH, 2019

[927] A. Named months in TENAKH: [Etym. From KLEIN, 926B]There are no named months in Genesis. 4 are mentioned – all in Noach & citing only the month #. There is disagreement on when the count started & if it was same starting point for all 4 months:from start of year or rain? See text box next p.230 The only named month in Chum. is 1st noted at "…Aviv הַיּוֹם אַתֶּם יֹצְאִים בְּחֹדֶשׁ הָאָבִיב: " Ex.13:4; 1st month of Spring & time of ripening barley in Israel. אָבִיב is assoc. with ripening barley: Ex:9:31. Also named at: Est.3.7:"…1st month, that is NISAN… בְּחֹדֶשׁ הָרִאשׁוֹן הוּא־ חֹדֶשׁ נִיסָן": Akka. *nisannu*.- start; 2nd "month Ziv זִו , which *is* the 2nd month," [IKi 6.1] [זיו brightness, radiance,. "Iyar" name of 2nd month of Jewish year. [Akka. *aaru.* not in TENAKH. 3rd Est.8:9 "SIVAN…בְּחֹדֶשׁ הַשְּׁלִישִׁי הוּא־ חֹדֶשׁ סִיוָן…"[Akka. *sim.nu,* which lit. means fixed date, time'].4th 'Tammuz' —not a month name in TENAKH. Name of a Babylonian god: only once: Ezek.8:11). 5th not in TENAKH. 6th Neh.6:15 "...25th of ELUL… וַתִּשָּׁלֶם הַחוֹמָה בְּעֶשְׂרִים וַחֲמִשָּׁה לֶאֱלוּל"; Akka. *elulu* harvest time; 7th: Ethanim אֵתָנִים– 1 Kings 8:2 month Ethanim, which *is* the 7th month; "ever flowing streams" ; Tishrei [not in TENAKH] Akka. *Tashritu*, beginning'. 8th I Kings 6:38 "month Bul, which *is* the 8th month -- " בְּיָרֵחַ בּוּל הוּא הַחֹדֶשׁ הַשְּׁמִינִי, [month of showers] CHESHVAN not in TENACH; 9th Zech. 7:1 '...the ninth month, in CHISLEV : בְּאַרְבָּעָה לַחֹדֶשׁ הַתְּשִׁעִי בְּכִסְלֵו ...' Akka. *kisliwu.* [no etym. given]. 10th Est 2:16 "tenth month, which *is* the month TEBETH; טֵבֵת בַּחֹדֶשׁ הָעֲשִׂירִי הוּא־ חֹדֶשׁ [Akka. *tebetu,* means perhaps 'month of sinking in' (i.e. muddy month), from *tebe* (=to sink in); 11th not in TENACH; 12th "twelfth *month*, that *is*, the month ADAR לַחֹדֶשׁ שְׁנֵים־עָשָׂר הוּא־ חֹדֶשׁ אֲדָר , properly means "month of the threshing floor". B. Of 24 month names in 2 month naming systems–only 4 from Aviv list[in Red]& 6 from Nisan list [BLUE]; no names for months 4,5,11 in TENAKH. Nisan List 'came up [with the Jews] from Babylonia-שְׁמוֹת חֳדָשִׁים עָלוּ בְיָדִם מִבָּבֶל.[אסא בן דוסא]'אָמַר רבי חֲנִינָה JT,Rosh HaSh.1.2, [Schott. 7b2] [see footnote 888-B on Babylonian & Sumerian month names]. Of 24 month names known to exist, 14 don't appear. Ask M.COHEN see footnote 888-B] C. Tho' the Zodiac is noted in TENACH,[Job 38:31-2] none of its then known 12 constelaltions are. [noted by Yisroel Weil 2/2022]– suggesting full vocab. of Biblical Hebrew may be >2× what's in TENAKH. A large part of these words – known Biblical Hebrew from when TENAKH was written- is in the works of Mishnaic sages. See also Zipf's law at footnote 499. D. See also footnote R.LEHMANN, 2005

[928] See, in this sefer: BOWING SEVEN TIMES - BUT NOT EIGHT & ROGERS,J.H. 1998 It isn't necessary to assume Libra was known to ancient Babylonians or others when the Aleph Bes was developed– only that the 7th lunar month –with Aviv 1st - contained the autumnal equinox –See "On the origin of the 12 zodiac constellation system in ancient Mesopotamia" G.KURTIK, 2021.

[929] A.'The relationship of the word *zibana to Ugar. mznm, Heb. Mznay-im..., as well as to Syr. zeban, 'to buy,'etc., remains problematical' citing: P.JENSEN,1889 ZA 6 151ff.[? 'Zeitschrift Für Assyriologie'1889]; E.CASSIN,1957; A.L.OPPENHEIM, ED.,1961.[see box, right, from p 99, pdf 115, cont on p.116] B. change may've been at shift from Ksav Ivri to Ashuris- when letter looked more like spear . See footnote 926.B [on scales]& 888.A.1 DEMSKY p17of 32. C. In French, "Sabbath- שַׁבַּת " dropped mid-word 'B'[as apparently occurred with ZBN for *scale*] & became Samdi – with 'di' for 'day' [Example of lenition of mid-word 'B':Yisroel Weil]

[930] P.166, M.DUNAND,1945, says the letter 'perfectly' represents balance scales.

[931] The academics[908] with notable exception of M.DUNAND,'45, supra , say this letter derives from Egyptian form meaning ax head. G.HAMILTON,'06, in his 450+p. book[p92-7 on Zayin ז] does not cite balance scales or DUNAND!

[932] Weighing might assume a % wool grease & fine dust -- to be washed out - easier estimate in pre-washed wool than very variable fraction of residual water after washing and drying.

[933] Without good netting & connected roof, sheep could easily escape.

zibānītu s.; 1. (a type of scale or balance), 2. the constellation Libra; MB, SB, NB, Akkadogr. in Hitt. KUB 7 37:10; wr. syll. (with det. GIŠ) and GIŠ.EBÍN (in mng. 2 MUL. ZI.BA.AN.NA); cf. *zibānû*.

giš.erín = *gi-iš-ri-in-nu* balance, giš.erín.gab, giš.erín.lul.bi – *qab-lu-u*, giš.erín.lul.bi – *lul-bu*, MIN *šá zi-ba-ni-ti* Hh. VI 108ff.; mul.zi.ba.an.na = *zi-ba-ni-tum* = ^{d}SAG.UŠ ^{d}UTU Hg. B VI 41.

TE *zi-ba-ni-[tum] šá ki-na-a-tum // mu-šaq-qil-tum* the constellation Libra, true (balance) = that which weighs CT 41 39:6 (comm. to *iqqur ipuš*).

1. balance — a) in gen.: *ṣabit* GIŠ *zi-ba-[ni-ti ēpiš ṣ]ilipti muštēnû* [*ab*]*an kīsi* (the merchant) who practices trickery as he holds the balances, who substitutes weights Lambert

The idea of counting from the Fall Equinox appears to contradict the reason Aleph [~4K yrs ago- asociated with the Spring Equinox] is the 1st letter.

In the parsha of Noach there are 5 references to 4 different months—all numbered but none named or openly linked with a particular season or starting point :

Gen 7:11 In the 600th yr of Noah's life, in the 2nd month, the 17th day of the month, the same day were all the fountains of the great deep broken up..."
Gen 8:4 And the ark rested in the 7th month, on the 17th day of the month, upon the mountains of Ararat.
Gen 8:5 And the waters decreased continually until the 10th month: in the 10th *month*, on the 1st of the month, were the tops of the mountains seen.
Gen 8:13 And it came to pass in the 601st th year, in the 1st *month*, the 1st *day* of the month, the waters were dried up from off the earth...
Gen 8:14 ...the 2nd month, on the 27th day of the mon., was the earth dried.

The 1st month in the Bible that is not only numbered but explicitly associated with a particular part of the year comes at the Exodus – according to the traditional Biblical time frame, ~800 years after the Flood. This is also the 1st named month.

Exo 12:2 "This mon. is to be for you the 1st month, the 1st month of your year. Exo 13:4 "Today, in the month of Aviv, you are leaving." See footnote 927

After some discussion, the Sages say the Flood Chronology counts months from Tishrei – assoc. with the Fall Equinox – but the 1st mon. in the Jewish Calendar is based on the Nissan-- assoc. with Spring Equinox – when the Exodus occurred[See:T.Bavli. Rosh HaShana 11-12]

In addition to Ches as a link between the functions represented by the 7th and 9th letters, it may be linked to 8th place on its own. Wool plucking & drying would occur in the dry season. If we start with the month of the Fall Equinox – represented by 7th letter, Zayin- then the 8th month will be the 1st full month of the warm-dry season in Mesopotamia. It's the month when sheep wouldn't need their wool and some would naturally begin to shed it - a good time to 'pluck' them.[934]

1 2 3 4 5

THE LETTER CHES ח
4 EARLY EXAMPLES
1.UGARITIC,2.PROTOSINAITIC, 3. PHOENICIAN, 4. ARAMAIC CUNEIF., 5. SAMARITAN. SEE FOOTNOTE 879

The rope-bounded sheep pens and rope-based racks could explain the origin of two sets of seemingly very different word-ideas that start with – and sound somewhat like – the name of this letter:1. חֵטָא - usually associated with 'sin' - and 2. חוּט : 'a string, rope or thread'. The 'sin' suggested by these letters is touching or breaching the fence/boundary line between what's guarded and not guarded –or what's 'good' and 'not good'. The string, rope or thread is what the drying rack or perimeter fence is built from and what the ball of yarn is made from. The direction of production is from the fence to the drying rack, to the ball of yarn – so the Ches precedes the Tes.

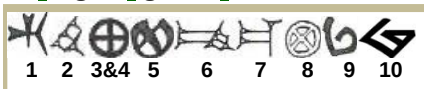
A 3rd group of words that begins with these same 2 letters in the same order -linked with cutting-is: חטב. The idea might be to make a line or line-like cut – that – as suggested by the final letter Bes – divides in two.

A 4th word beginning with the same two letters in the same order is חִטָּה : wheat. This may refer to a combination of properties of this plant – that it grows like a straight line and is harvested by cutting. The final ה might remind us that the cut wheat is subsequently 'combed' to remove inedible parts and that turning wheat kernels into bread was usually women's work.

The source of the name is not known – tho' it may be related to sounds of assembling the pens & drying racks —or removing the flax or wool from them.

The 9th letter is Tes ט. In Ksav Ivri it resembles a ball of yarn[935] and is the 1st letter of the word to spin fiber into thread or yarn: טָוָה. Such spinning was women's work.[936] Also, spinning is not mentioned among the 10+ special skills of Betsalel בְּצַלְאֵל and Oholiav אָהֳלִיאָב.[937] So Tes-ט is given 9th place – for the 9 months of pregnancy –a number most associated with women. It may also be 9th because if wool plucking, combing, washing and drying were in the 8th month – spinning wool into yarn might be finished in the 9th.

Maybe the initial sound and letter name was reminiscent of finger nails on taught thread while spinning with a spinning whorl [938]– like taught, tight & twist – a softer alveolar - or even pharyngeal- "t".


1 2 3&4 5 6 7 8 9 10

9 EARLY EXAMPLES OF THE LETTER TES ט
UGARITIC [1. ALPHABETIC, 2. SYLABIC];3&4. PROTOSINAITIC & PHOENICIAN; 5. KSAV IVRI [LACHISH LETTERS,LATE 1ST TEMPLE]; 6&7. ARAMAIC CUNEIF.; 8. KSAV IVRI [TEL DAN]; 9. ISAIAH SCROLL, QUMRAN[125BCE]; 10.SAMARITAN. SEE FOOTNOTE 879

The 10th letter is Yud י. In Ksav Ivri it suggests a single finger. Yarn is spun with the fingers – and there are ten fingers – therefore, it follows the ball of yarn – for 10th place in the Aleph-Bes. The source of the name isn't known. It should be clear from the story of Adam and

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934 A. In Torah , the word that is used suggests cutting with shears- not plucking: Br.31:19 'And Laban went to shear his sheep... וְלָבָן הָלַךְ לָגֵזֹז אֶת־צֹאנוֹ'. Closer to the time of Noah, they were apparently plucked– see E, below. B. There were 2 calendars running at the same time -starting near Spring & Fall equinoxes. The 'Early Semitic Calendar' started in Spring with month names asoc. with secular seasonal activities & eg, Šamšī-Adad calendar, with same month names but starting in the Fall:~3800BP, see Table 4. N.ZIEGLER,2021. C. Laban was shearing his sheep at time of yr when there were already young lambs & goats that could travel but not too fast. Gen31:19; Laban went to shear his sheep. Gen:33:13 '...the flocks and herds with young *are* with me: and if men should overdrive them one day, all the flock will die.' [melacha of gozeiz – shearing] D.'Shearing sheep takes place from the middle of April to the middle of May"p. 208 E.L. OCHSENSCHLAGER 2004, E.In the Sargonic calendar there's a month of the 'sheep plucking shed' p61, but it isn't clear which # month is referred to. Mark E. COHEN, 1993

935 'Têth a été rattaché à la racine טוה, filer, arabe enrouler. Cette lettre pourrait représenter tout bonnement une pelote de fil avec sa ligature. De l'idée de filer la racine a pu passer facilement au sens de pelotonner. [Teth was related to the root טוה,["...wise hearted women spun with their hands..וְכָל־אִשָּׁה חַכְמַת־לֵב בְּיָדֶיהָ טָווּ " Ex. 35:25] to spin, Arabic: to coil. This letter could simply represent a ball of thread with its ligature. From the idea of spinning, the root could easily pass to the sense of 'winding up into a ball]". [Automatic Google transl. French to English] p. 166, M. DUNAND, 1945, cited by D.DIRINGER, V.1 1968 , P 169

936 Shem 35:25-6: וְכָל־אִשָּׁה חַכְמַת־לֵב בְּיָדֶיהָ טָווּ וַיָּבִיאוּ מַטְוֶה אֶת־הַתְּכֵלֶת וְאֶת־הָאַרְגָּמָן אֶת־תּוֹלַעַת הַשָּׁנִי וְאֶת־הַשֵּׁשׁ:וְכָל־הַנָּשִׁים אֲשֶׁר נָשָׂא לִבָּן אֹתָנָה בְּחָכְמָה טָווּ אֶת־הָעִזִּים:
'And all the women that were wise hearted did spin with their hands, & brought that which they had spun, of blue, & of purple, of scarlet, & of fine linen. And all the women whose heart stirred them up in wisdom spun goats' *hair*.'

937 Sh35:30-35 וַיֹּאמֶר מֹשֶׁה אֶל־בְּנֵי יִשְׂרָאֵל רְאוּ קָרָא יְהוָה בְּשֵׁם בְּצַלְאֵל בֶּן־אוּרִי בֶן־חוּר לְמַטֵּה יְהוּדָה: וַיְמַלֵּא אֹתוֹ רוּחַ אֱלֹהִים בְּחָכְמָה בִּתְבוּנָה וּבְדַעַת וּבְכָל־מְלָאכָה: וְלַחְשֹׁב מַחֲשֶׁבֹת לַעֲשֹׂת בַּזָּהָב וּבַכֶּסֶף וּבַנְּחֹשֶׁת: וּבְחָרֶשֶׁת אֶבֶן לְמַלֹּאת וּבַחֲרֶשֶׁת עֵץ לַעֲשׂוֹת בְּכָל־מְלֶאכֶת מַחֲשָׁבֶת: וּלְהוֹרֹת נָתַן בִּלְבּוֹ הוּא וְאָהֳלִיאָב בֶּן־אֲחִיסָמָךְ לְמַטֵּה־דָן: מִלֵּא אֹתָם חָכְמַת־לֵב לַעֲשׂוֹת כָּל־מְלֶאכֶת חָרָשׁ וְחֹשֵׁב וְרֹקֵם בַּתְּכֵלֶת וּבָאַרְגָּמָן בְּתוֹלַעַת הַשָּׁנִי וּבַשֵּׁשׁ וְאֹרֵג עֹשֵׂי כָל־מְלָאכָה וְחֹשְׁבֵי מַחֲשָׁבֹת:
Ex. 35:30-35: '...See, the LORD hath called by name Bezaleel the son of Uri,... And he hath filled him with the spirit of God, in wisdom, in understanding, and in knowledge, and in all manner of workmanship; And to devise curious works, to work in gold, and in silver, and in brass, And in the cutting of stones, to set *them*, and in carving of wood, to make any manner of cunning work. And he hath put in his heart that he may teach, *both* he, and Aholiab, the son of Ahisamach, of the tribe of Dan. Them hath he filled with wisdom of heart, to work all manner of work, of the engraver, and of the cunning workman, and of the embroiderer, in blue, and in purple, in scarlet, and in fine linen, and of the weaver, *even* of them that do any work, and of those that devise cunning work.

938 Tho' some say Tet pictured a spinning wheel, there are no allusions to spinning wheels until 1000 yrs later – in China. Others suggest a spindle: Schematic Table of Proto-Sinaitic Characters [after p.9] William Foxwell ALBRIGHT, 1969

Chava that they were aware of, used and created words. They named things and people before there was human awareness of writing. If the instructions given to Adam on what could and could not be eaten[939] had been in written form, it would have been clear that touching the Tree of Knowledge was OK.[940] Eating from it was not.

Words for basic body parts may have been among the first words spoken. Without a written system to help stabilize pronunciation, the original word for finger could have gone through very substantial changes before it was put in writing.[941] [942]

The first use of the word "book- סֵפֶר"- or any other word related to writing- is at Br. 5:1[943]:

This is the book of the generations of Adam-

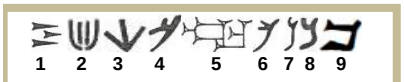
זֶה סֵפֶר תּוֹלְדֹת אָדָם

It's the first place we have an age of a parent when a child is born to them- and an age at death[Br.5:1-5].. We may well think that in this period, *"The Book of the Generations of Adam"* began to be written. We may also imagine words specifically related to books, writing and letters would be among the first new words created in this time frame - taking good advantage of the meanings of the letters themselves. We'll look more closely at this after our somewhat conjectural exploration of the origin, sound & position of each letter.[944]

8 EARLY EXAMPLES OF LETTER YUD י
1.UGARITIC ALPHABETIC; 2.PROTOSINAITIC; 3.EARLY PHOENIC'N; 4.KSAV IVRI [LACHISH LETT'RS,LATE 1ST TEMPLE]; 5.ARAMAIC CUNEIF.; 6. KSAV IVRI [TEL DAN]; 7.KSAV ASHURIS,ARAMAIC MARRIAGE DOC. [ELEPHANTINE LET'RS~2460BP] 8.ISAIAH SCR'LL, QUMR'N[~2145BP]; 9.SAMARIT'N. SEE FOOTN'T 879

The 11th letter is Kaf כ.[895] It means the palm of the hand or sole of the foot. As an affix, it means "like" – in the sense that one hand or foot is "like" the other – but not identical. It's associated with - and reasonably follows- the word for finger. The initial "k" sound may be in imitation of clapping. The final "f" sound may imitate two palms rubbed together and/or bare feet shuffling - fitting for a word meaning both hands and feet.

The twelfth letter is Lamed ל. It looks like a shepherd's crook. It's usually grasped by hand –and may be propped against the feet – so it would follow Kaf. It has the 'L' sound which we saw meant 'to' [see footnote 892 & letters א, ג, ד]- and the 'M', for both with water and the idea of 'from'- as we'll see with letter מ. These two letters are followed by the 'D' sound of the 4th letter –for 'door'. So this letter means controlling animals with a staff grasped by the hand & propped by the foot. It was used to guide animals to and from water and, in general, to control its comings & goings – like a door. It's the symbol of guidance, domestication and education.



8 EARLY EXAMPLES OF LETTER CHAF כ
1.UGARITIC ALPHABETIC; 2. PROTOSINAITIC; 3. EARLY PHOENICIAN; 4. KSAV IVRI [LACHISH LETTERS,LATE 1ST TEMPLE]; 5. ARAMAIC CUNEIF.; 6. KSAV IVRI [TEL DAN]; 7.KSAV ASHURIS,ARAMAIC MARRIAGE DOC.[ELEPHANTINE LET.~ 2460BP] 8. ISAIAH SCROLL, QUMRAN [~2145 BP]; 9.SAMARITAN. SEE FOOTNOTE 879

The 13th letter is Mem מ. In Ksav Ivri it looks like ripples of water. It's also an affix, meaning from: water flows from a spring; milk flows from the mother. One can also say, water flows to the sea; milk flows to the baby – but a choice was made that Lamed—as an affix-- means 'to' – which is more an element of positive control – & Mem - as an affix –meant 'from'. If we're starting from home & returning, the expression 'to & from' will be more appropriate – & is more common – than 'from & to' – giving another reason Mem follows Lomed. Water – Mem- is also the most common, non-home destination that the sheep might be guided—both to and from.

The source of its sound is generally understood to be a special kind of onomatopoeia – related to the sounds an infant makes when feeding. This is said to be the source of words for mother/ ema in many languages.[945]

6 EARLY FORMS OF LAMED ל
1. UGARITIC ALPHABETIC; 2. EARLY PHOENICIAN; 3. KSAV IVRI [LACHISH LETTERS,LATE 1ST TEMPLE]; 4. ARAMAIC CUNEIF.; 5. KSAV IVRI [TEL DAN]; 6.KSAV ASHURIS,ARAMAIC MARRIAGE DOCUMENT [ELEPHANTINE LETTERS~2460BP]; 7.SAMARITAN. SEE FOOTNOTE 879

The 14th letter is Nun נ. In Ksav Ivri it resembled the head and open mouth of a large fish – as it might be seen if it were yanked out of the water with a fish hook in its mouth.[946] It naturally follows the letter for water. Fish weren't domesticated and came in many varieties. Each type had its own name origin – from before words were written down and stabilized. [941,942] Why fish, in gen-eral, is called 'nun', isn't known. [947]

Nun is one of 3 or 4 Aleph-Bes letters that begin and end with the same sound: Heh[?], Vov, Mem & Nun. If the purpose

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[939] Gen:2:17 וּמֵעֵץ הַדַּעַת טוֹב וָרָע לֹא תֹאכַל מִמֶּנּוּ כִּי בְיוֹם אֲכָלְךָ מִמֶּנּוּ מוֹת תָּמוּת: "but of the tree of the knowledge of good and evil you shall not eat, for in the day that you eat of it you shall die."

[940] Gen 3:3 וּמִפְּרִי הָעֵץ אֲשֶׁר בְּתוֹךְ־הַגָּן אָמַר אֱלֹהִים לֹא תֹאכְלוּ מִמֶּנּוּ וְלֹא תִגְּעוּ בּוֹ פֶּן־תְּמֻתוּן: 'God said,'You shall not eat of the fruit…neither shall you touch it, lest you die.'

[941] The use of the word "day" in the days of creation is not intended to be a constant period of time like an ordinary day.At Gen 2:4 we have:

אֵלֶּה תוֹלְדוֹת הַשָּׁמַיִם וְהָאָרֶץ בְּהִבָּרְאָם בְּיוֹם עֲשׂוֹת יְהוָה אֱלֹהִים אֶרֶץ וְשָׁמָיִם:

"… In the day that the LORD God made the earth and the heavens," But the "heavens שָׁמַיִם" were created and named on the 2nd day [Gen 1:6-8] while the "earth אֶרֶץ" was created and named on the 3rd day [Gen 9-10]. So "day- יוֹם" in Gen 2:4 combines 2 different days in Gen 1:6-10.

[942] See works on glottochronology & lexicostatistics: eg: M SWADESH, 1955; Russell D. GRAY & Quentin D. ATKINSON, 2003 ; Andrew KITCHEN, et al, 2009

[943] Midr. Rab. Ber. 24:7 "R. Tanchuma in name of R Elazar & R. Menachem in name of Rav said: Adam…taught all trades …even the rulings of a book." See next use of "book סֵפֶר"and discussion at footnote 1107.

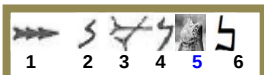
[944] See PART 7, below- on phono-ideographic words .

[945] Roman JAKOBSON, 1959

[946] A.1 I 1st saw 'head of a fish with mouth open...'p12,Y.SHABATH, illustra.. He gives no source, suggesting it's widely under -stood. He notes some say it was a snake: A.2 '…fish [image in nun] is always drawn perpendicularly, as if captured & hung [with open mouth] upon a line or hook…'p137,H.SKINNER,1905.B.'Serpent=letter nun(Ethiopic name: nahas). 3 serpent signs appear in the horizontal inscription (1.4,6,8), each executed in the same basic fashion.'J.DARNELL,2005. See also PART 4, infra, on fish/snake, & "FROM THE COPPER SNAKE TO THE TREE OF LIFE", p 93-97 in this sefer.

[947] 'Nun':*fish* is unusual & may be from a pre-Sumer'n/Akkad'n fishing oriented people in SE Mesopot. P 76-7 G.BARTON, 1934 . 1 word for fish in Tenach: Dag, is a another sign Biblical Heb. has >2× as many words. [See footnote 927 C]

8 EARLY EXAMPLES OF LETTER MEM מ
1.UGARITIC ALPHAB'TIC;2.PROTO-SINAITIC;3. EARLY PHOENICIAN; 4. KSAV IVRI [LACHISH LETTERS,LATE 1ST TEMPLE]; 5. ARAMAIC CUNEIF.; 6. KSAV IVRI[TEL DAN]; 7.KSAV ASHURIS,ARAMAIC MARR'GE DOC. [ELEPHANTINE LETT'RS~2460BP] 8. ISAIAH SCROLL, QUMR'N [~2145BP]; 9.SAMARIT'N. SEE FOOTNOTE 879


1 2 3 4 5 6

4 EARLY FORMS OF NUN נ L - R, UGARITIC, PHOENICIAN, ARAMAIC: CUNEIFORM & CURSIVE 5: TROUT HOOKED IN ITS LOWER JAW BEING DRAWN OUT OF THE WATER- LIKE #2 & 4;6.SAMARITAN SEE FOOTNOTE 879.E

of the Aleph-Bes were to convey only sounds associated with the letters in the most efficient way, most letters would begin and end this way – or, like Peh, they would-n't end with a different consonant.

It's in some measure the observation that the word gog[948] -roof — isn't the 3rd letter – though it's between house & door[948.C]--and the letter after Nun isn't sus – horse[946.D] – but Somech-– that led me to see that the letters were not simply acrophonic. They looked like they represented specific ideas as well. The 3rd letter not only isn't gog but it's Gimel – seemingly unrelated to houses and doors. This led me to think that it—and the other letters of the Aleph-Bes- said something about the people who first used this writing system. With Gimel as the 3rd letter, it tells us camels were important to them. It also suggests the Aleph-Bes as we know it was formed after its creators began using domesticated Bactrian camels.

The 15th letter is Somech ס. In Ksav Ivri, it looks so different from Ksav Ashuris that one would think that the two versions of the letter have nothing to do with each other. The usual understanding is that this letter represents some kind of support – but what kind of support would go between- or be associated with- the preceding letter -- Nun נ –fish- and the following letter: Ayin ע – an eye, well or spring? The answer –from these examples of Ksav Ivri – appears to be a tree.[949]

1 2 3 4 5 6 7 8

5 EARLY FORMS OF SOMECH ס

1:UGARITIC; 2:PROTO-SINAITIC; 3:EARLY PHOENICIAN; 4:TEL DAN INSCRIPTION[OLD ARAMAIC (PHOENIC'N ALPHABET), 870-750 BCE; 5:KSAV IVRI (LACHISH LETTERS)590BCE; 6:CEDAR; 7:WILD DATE PALM; SAMARITAN SEE FOOTNOTE 954 879

In ancient Akkadian- a close relative of Biblical Hebrew- one of the words for tree is "samḫasu".[950] Trees would be found by upland springs and streams – where there are fish and where the shepherds would go in the summer to find plenty of grazing for sheep and avoid the lowland heat – and they'd also be found by desert oases – which were important for more long distance winter transhumance and trade. The trees – which may have been majestic cedars – like the Cedars of Lebanon[951] with their spreading horizontal branches-- and date palms – with their welcome shade & fruit at an oasis—were a byword for support. They also supplied wood – for building, tool making, cooking & warmth. How does this version of the letter relate to the closed circle of today's Somech? Maybe the circle is the tree seen from above?! As 4,000 years ago great forests of cedar & cypress covered the mountains of Lebanon and SE Turkey -- with none in Ancient Egypt-- both the wood and symbol for the trees may've come from the same source.[952]

Where did Somech get its sound? What sound does a tree make? It makes a soft whistling sound – when the wind blows- *whsshew* –not the same as any other letter.[953] Why is it called Somech סמך ? Mem מ connects it with water – a support by the water. Chaf ך [895] reminds us of the branches of trees or fronds of palms – like the fingers of a hand or several hands.[954]

The 16th letter is Ayin ע.[955] It means both well or spring and an eye- as well as face, surface or appearance.[956] As already noted, it's connected to the previous letter, Somech – by trees that it supports- that mark it out – particularly when it's an oasis. At this point, the source of its sounds and name - עַיִן,- aren't known[942] — but if a person is, God forbid, hit in the eye, a cry like this is likely to result. [See also note by Yud.[941,942]]

The 17th letter is Peh פ.[895] It means mouth & things we do with our mouths—as well as the opening of a well.[957] It would easily follow Ayin that means eye, face and well. It's used for a set of sounds that particularly emphasize the lips with unvoiced plosive and fricative. As it's unvoiced, and associated with the most visible part of the mouth—the lips- it's more connected with the most apparent part of the mouth- and that alone- than other sounds or letters. So its sound fits its name.

1 2 3 4 5 6 7

6 EARLY EXAMPLES OF AYIN ע

1.UGARITIC ALPHABETIC; 2. PROTOSINAITIC;3.EARLY PHOENIC'N;4.KSAV IVRI [LACHISH LETTERS,LATE 1ST TEMPLE]; 5. ARAMAIC CUNEIF.[COMBINAT'N OF 2 'A's & AN 'N']; 6.KSAV IVRI [TEL DAN];7.SAMARITAN.SEE FOOTNOTE 879

Ayin and Peh have something else that links them with trees: The pin-hole camera effect. The bright sun shining through the many small, irregular openings in the

1 2 3 4 5 6 7 8 9

9 EARLY EXAMPLES OF THE LETTER PEH פ

1.UGARITIC ALPHABETIC; 2.MESOPOT. CUNEIF. SYLLAB.; 3. EARLY PHOEN.; 4.KSAV IVRI [LACHISH LETTERS,LATE 1ST TEMPLE]; 5. ARAMAIC CUNEIF.; 6. KSAV IVRI [TEL DAN]; 7.KSAV ASHURIS, ARAMAIC MARRIAGE DOC.[ELEPHANTINE LETERS~2460 BP];8. ISAIAH SCROLL, QUMRAN[~2145BP]; 9.SAMARITAN.SEE FOOTNOTE 879

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[948] A. 2/18/22, at N.I.L., G. Assouline suggested this might be because 'gog' didn't yet exist in Hebrew for roof. But, it's in Ugaritic:gg –roof,p292 v.1, G.DEL OLMO LETE,2015. B. Ibid p 287, V.1, letter G alone: 'loud voice, shout' consistent with assumption: gimel alone imitates camels distinctive growling sound. C. Similarly, with Daleth –Door: Why not dag: fish? D. Horses were domesticated in NW Mesopotamia 4+k y BP, but name 'sus' may've come later J.ZARINS,1978

[949] Jer.17:8"…like a tree planted by the water … כָּעֵץ שָׁתוּל עַל־מָיִם …"& Ps.1:3

[950] ḫ = Hebrew ח or 'Ch' in Chanuka. Image at left is from E. REINER, 1981. 'lex' means word found in 'word list'. Original source & date of samhasu not yet found by ASA

[951] See photo Cedars of Lebanon, p 170

samḫaṣu (*samuḫaṣu*) s.; (a tree or plant); lex.*

giš.sa.KAK = *sa-am-ḫa-ṣu*, giš.sa.KAK.KAK (var. or gloss: giš.su.[x].[x.x]) = [MIN], giš.sa.BU (var. giš.sa.B[U.x]) = MIN, giš.sa.am.ḫa.zum = MIN Hh. III 452ff., see MSL 9 166; [giš.s]a.am.ḫa.zum (in Sum. list) StBoT 7 pl. 2a iii 3 (= KBo 26 6), cf. giš.sa.mu.ḫa.zum RS Forerunner to Hh. III iii 8, in MSL 5 131.

[952] See p. 96-7, M.DUNAND 1945, who suggests related Egyptian symbols came from Syria -and other forested areas- to Egypt.

[953] A Yemenite Tradition – heard by ASA from a non-Yemenite near the Zichron Moshe Shul in ~ time of Succoth 5783 [2022] -has ס's sound produced by "making the mouth round" – like the letter- giving a sound -accordding to ASA- like "the wind in the trees". Get more info. See also footnotes 962 on ק and 905 on ג.

[954] [Source of #2, 'Early Cannanite',Y.GNAT,2007, primary source not found]. No hieroglyph for tree like somech. But, there are hieroglyphic & hieratic signs like this – said to be a 'support'- assoc. with 12th Dyn.[[1940-1756BCE]& 2nd intermed. pd[1782–1570BCE]at p.174-5, G.HAMILTON,2006. He says there, it isn't attested in any 'proto Canaanite' inscrip- earliest is 'Byblian Spatula',1000+BCE.He cites:12th dyn. plate 29&31; pl.34.3, H.STEWART 1979; see also: G.MÖLLER; 2nd Khufu boat ~2500 BCE has 35m Lebanon Cedar beam, pdf 34,K.YOSHIMURA, 2022; R. DEUTCH, 2009-Ksav Ivri ס.

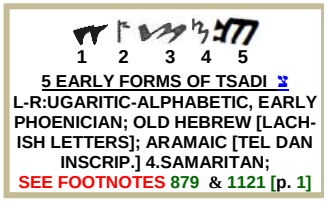
[955] Tho' the earliest abecedaries from Ugarit & most aleph-bes ordered Psalms have the order ע → פ, a sloppily written abcedary & possibly a few Psalms 34:16-18 & Lament.2,3,4 have these letters in reverse order: Mitchell FIRST, 2012

[956] 1st use:Br.3:5'...your eyes will be opened...וְנִפְקְחוּ עֵינֵיכֶם...'Ex.10:5'...the face of the land... וַיְכַס אֶת־עֵין הָאָרֶץ'Ex.24:16'...She went down to the spring...וַתֵּרֶד הָעַיְנָה וַתְּמַלֵּא כַדָּהּ וַתָּעַל:..."

[957] 1st use: Br.4:11 'the ground, which opened its mouth to receive your brother's blood …. ... הָאֲדָמָה אֲשֶׁר פָּצְתָה אֶת־פִּיהָ לָקַחַת אֶת־דְּמֵי אָחִיךָ מִיָּדֶךָ:" Br.29:2 '…The stone on the well's mouth was large וְהָאֶבֶן גְּדֹלָה עַל־פִּי ... הַבְּאֵר:" Br.45:12"...that my mouth that speaks to you וְעֵינֵי ..." אֲחִי בִנְיָמִין כִּי־פִי הַמְדַבֵּר אֲלֵיכֶם:

canopy of a tree produces bright, circular pin-hole images of the sun amdist the tree's shade. As the wind causes the leaves to move, the pinholes not only move – but open and close – like eyes or mouths. One way to see a partial eclipse – without looking at the sun at all- is to look at those pin-hole images. When, for example, a 3/4ths eclipse reduces the sun's image to a crescent, all the pin-hole images of the sun will have the same orientation and crescent shape- though they won't open and close – wink- at the same time. [958]

The 18th letter is Tzadi[959] צ. In Ksav Ivri, it looks like a fishing pole and line.[960] This appears to make it more suitable for a place near the letters for fish and water- not between the letter Peh פ for mouth and the letter Kuf ק, which looks like a combination of head and neck. It also appears to be more closely related to Somech ס since fishing poles would be made of wood – taken from trees. However, if we assume these meanings for Tzadi צ and Kuf ק: "fishing pole with fishing line" and "head and neck"- there is a reasonable connection to its position in the Aleph-Bes if we understand how fish are caught. The fish sees the bait, *then* grabs the bait with its mouth. That gives us: 'Ayin→Peh'= 'eye→mouth'.[961-B] Then it's caught – hooked on the line and pole - Tzadi - in the posture of the fish as seen in Nun of Ksav Ivri.[961-A]


1 2 3 4 5

5 EARLY FORMS OF TSADI צ

L-R:UGARITIC-ALPHABETIC, EARLY PHOENICIAN; OLD HEBREW [LACHISH LETTERS]; ARAMAIC [TEL DAN INSCRIP.] 4.SAMARITAN; SEE FOOTNOTES 879 & 1121 [p. 1]

For each letter there may be more than one good choice for position-- taking each letter separately. The best choice is the position – when combined with the other letters – that leads to the best didactic-mnemonic story.

At this point, the source of the name is not known. Maybe it comes from the sounds of jerking the fishing line and hooked—but still struggling—fish, out of the water?

The 19th letter is Kuf ק. It appears to be a combination of the head and neck – maybe signifying the point where the two meet – the back of the throat. This is also where the Kuf sound of comes from.[962]

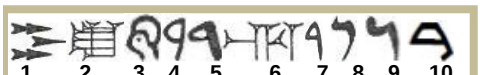
1 2 3 4 5 6 7

6 EARLY FORMS OF KUF ק

UGARITIC: CUNEIFORM [1.ALPHABETIC, 2. SYLLABIC]; 3. EARLY PHOENICIAN; 4. OLD HEBREW [LACHISH LETTERS]; ARAMAIC:[5. CUNEIFORM , 6. SCRIPT]; 7. SAMARITAN SEE FOOTNOTE 879

Maybe it comes after the Tzadi -the fishing pole and line- to remind children – and adults too -- to be careful when eating fish – not to get the small bones caught in our throat. If we don't choke on them, we would have to cough them up – with the sound of Kuf and "cough" being close enough to suggest a strong mnemonic-onomatopoeic linkage.

The sequence Tzadi-Kuf presents an additional reason these letters may have been chosen to follow each other. When reciting the letter names in Aleph-Bes order, it would be easy to say something that sounds like "Tza-dikuf" which might be heard as Tzadik-Kuf or Tsadik Kaf. A Tsadik צַדִּיק is a righteous person.[963] Tsadik is also among the normal pronunciations of the name of the letter. It provides a way to include in the Aleph-Bes a word deeply connected to Torah-centered morality –ideas very difficult to show with simple, letter-like signs. This is a good place to note: there's nothing dangerous in Aleph-Bes letter names & associations. This may be why snake- nachosh – wasn't used and Nun was.[946-B]


1 2 3 4 5 6 7 8 9 10

9 EARLY EXAMPLES OF RESH ר

UGARITIC: 1. ALPHABETIC, 2. SYLLABIC; 3. PROTO-SINAITIC; 4. EARLY PHOENICIAN; 5. KSAV IVRI [LACHISH LETTERS,LATE 1ST TEMPLE]; 6. ARAMAIC CUNEIF.SYL.; 7. KSAV IVRI [TEL DAN]; 8.KSAV ASHUR.,ARAMAIC MARRIAGE DOC. [ELEPH. LETTERS~2460BP] 9. ISAIAH SCROLL, QUMRAN [~2145BP]; 10.SAMARITAN.SEE FOOTNOTE 879

The 20th letter is Resh ר. It's closely related to the word for head and appears to be a schematic depiction of a head – particularly if Kuf ק represents the head and neck. The final sound in the name of this letter --- Sh-- is strongly suggestive of the next letter -- Shin ש—tooth. In moving one's tongue from the back of the throat -- where it would be for making the sound of Kuf-- to where it would be – in the front of the mouth—near the teeth -- for making the sound of Shin it would be natural and easy to pass through the toungue position for the initial 'R' sound of Resh.[964]

Note the similarity of the Samaritan Daleth and the Samaritan Resh. Both have trapezoids sitting on their longer sides with identical tails on their lower right corners. The Daleth also has a projection at its upper right corner.

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[958] The author saw this in tree shadows in Jerus. –Aug,11/'99. Eclipse lasted for hrs & reached 80% of sun's diam. Simulation: TIMEANDDATE

[959] Also spelled Tsade *Ṣade*…Sadhe, Tzaddik – from wikipedia 2-16-22

[960] V.16 צ, CAD, A.L.OPPENHEIM 1962, was searched for fish & anything related. Closest word: 'ṣajadu' where hunter & fisherman are linked. '*Sayd*' in Arabic refers to hunting & fishing. Related to the word צַיִד: Fishing/fishing pole, not in Tenach. Br:10:9:'...a mighty hunter...הוּא־הָיָה גִּבֹּר־צַיִד', '...name of the letter... means lit. 'fishing hook' & prob. …in allusion to the ancient form of this letter."E.KLEIN 1987

[961] A.The fish story – seeing the bate & grabbing the hook with its mouth - is a hypothetical mnemonic-pedagogic association to remember the sequence, names & shapes of the letters. Relatively young children could sit with a fishing pole & catch fish for the family. Named, pictographic letters are probably far more amenable to such stories than abstract shapes. One would expect the line to be to the left of the pole- like the other letters that face left-the direction of writing: aleph, ב, ג, ם, ר. But then the line would be straight with weight &/or fish attached & it's clearly wavy-& thus more identifiable as a fishing line. B. There are places where Eyen & Peh are reversed:eg: Lam: 2:16-17;4:16-17. See: 'The Missing Nun Verse in Ashrei' for discussion of other unusual Aleph-Bes acrostics in the Bible. Ben Zion KATZ 2/2022

[962] Kuf ק may be the predecessor of writing systems like Devanagari & more obviously, Hangul [see footnotes1076,1080], which are based on letters that show positions of the mouth parts when making each letter's sound. The letter Q – from Kuf ק -retains this idea. See also Gimel & Somech – which may have a similar 'postion of mouth parts' idea, at 953The ס is the primary 'k' sound in Dev. All full Dev. letters 'hang' from a horizontal line. See pdf p 143 of G.BUHLER 1898. Hangul 'k' is ㄱwith speaker facing left & tongue at back of throat. 1st Hangul book SEJONG THE GREAT, 1446, opened on the right & had vertical lines from top to bottom & right to left. 1st letter on p.1 was ㄱ'k'. KOREA, 2022

[963] A. 1st use: Gen6:9 "... Noah was a righteous man; he was blameless in his age..."
אֵלֶּה תּוֹלְדֹת נֹחַ נֹחַ אִישׁ צַדִּיק תָּמִים הָיָה בְּדֹרֹתָיו אֶת־הָאֱלֹהִים הִתְהַלֶּךְ־נֹחַ׃

.B. See also on Noah in this sefer:A. HOW DID THE GENERATION OF THE MABUL THE FLOOD - GET SO BAD & HOW DID THE PEOPLE OF S'DOM GET SO BAD SO QUICKLY? B. FROM THE MOUNTAINS OF ARARAT TO THE TOP OF PISGAH: A CLOSER LOOK AT THE MABUL -THE FLOOD...

[964] Resh is said to have 2 sounds & is included in the BGDKFRT group in Sefer Yetsirah, Ch 4, §1, 'Sepher Yezirah ספר יצירה' With English Trans., Preface, Explanatory Notes & Glossary, Rev. Dr. Isidore Kalisch,1877 Hebrew Books #38753

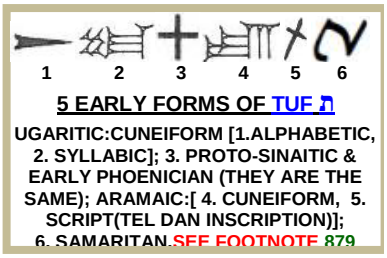
7 EARLY *FORMS OF SHIN* ש

UGARITIC: CUNEIF.[1.ALPHABETIC, 2.SYLLABIC]; 3. PROTOSINAITIC; 4. EARLY PHOENICIAN; ARAMAIC:[5. CUNEIF, 6.SCRIPT(TEL DAN INSCRIPT'N)]; 7.ISAIAH SCROLL [QUMRAN]; 8.SAMARITANSEE FOOTNOTE 879

This upper projection is reminiscent of the smaller projection of the Ksav Ashuris Daleth that distinguishes it from the Ksav Ashuris Resh. It reminds us that- like Avroham Avinu – when someone comes into the shade above our door – we should say little, invite them in – and do much.[965]

The 21st letter is Shin שׁ.[895] It means tooth. It resembles teeth – which are found – very visibly -- in the head – and thus it follows Resh. Its sound is made by putting the upper and lower teeth together and parting the lips – so the teeth are seen. The ending sound is also associated with teeth in the same highly visible position. So, in combination, the teeth are seen for a slightly longer time than if the final, 'n' sound were absent. As an affix, its primary meaning is "that"—as one might say "They live in that house." It is as though one bit off a particular object from a group of similar objects.

The 22nd – and last - letter – is Tuf תּ.[895] – also pronounced Sof or Thof. It looked like a plus sign + or X in ancient versions. Appropriately enough, it means a target or mark – a point to aim at— so it's the last letter. As an affix, coming last, it means the past. The source of the sounds of this letter and name are not known- though the tongue position – when extended beyond the teeth for the "thuf" sound, is pointing at a distant target.[966]



5 EARLY FORMS OF TUF תּ

UGARITIC:CUNEIFORM [1.ALPHABETIC, 2. SYLLABIC]; 3. PROTO-SINAITIC & EARLY PHOENICIAN (THEY ARE THE SAME); ARAMAIC:[4. CUNEIFORM, 5. SCRIPT(TEL DAN INSCRIPTION)]; 6. SAMARITAN SEE FOOTNOTE 879

PART 3: Types of letters: What's there, what isn't there & what this says about the originators of KSAV IVRI- כתב עִבְרִי

The choices of letters for the Aleph-Bes and their order tell us something about the society that first used it. In order of their appearance, three of the letters-- Aleph, Gimel and Nun-- represent common animals that were important and helpful in the life of the people: cattle, camels and fish.[967] Normally, when properly handled, these creatures are not dangerous, poisonous or damaging. At the same time, the domestication, control and breeding of large, horned cattle and Bactrian camels was a major socio-technological accomplishment.[968]

The first letter, Aleph – and the seventh, Zayin--are linked to the annual cycles of the seasons—and constellations—the balance and creation of the world --and the major Holidays. The people who first used the Aleph-Bes had a lunar[969]-solar calendar and knowledge of seasons and astronomy.[970] Their letters were bound to Heaven. Also, Aleph – as the first letter in the Aleph-Bes– has the potential to tell us -when it's the first letter of a word - what is of primary importance.

The 2nd letter, Bes and 4th, Daleth - represent the house and home – family life –including modesty and privacy.

The 5th letter, Heh is an object associated with work[971] -- made and used by the people who first used the Aleph-Bes-- and so are Vov, Zayin, Ches, Tes, Lamed & Tsadik: 7 out of 22 letters. All are constructive – none are weapons – or, like a knife, dual use. Heh isn't a person exulting; Vov isn't a 'mace head'; Gimel isn't a throw-stick & Zayin isn't a spear – as some experts have claimed.[908]

The tenth letter, Yud- a finger – is a part of the human body. It is in the tenth place to remind us, as we have seen, that the order of the Aleph Bes is tied to the meaning of the letters, both in number and in association with each other. With Chaf, Ayin, Peh, Kuf, Resh and Shin, 7 of 22–are parts of the human body that adults and children, male and female have in common and can point to without violating cultural norms of modesty. Seven of 22 is the same fraction as objects associated with work.

Mem is water and so is one of the meanings of Ayin.

Sof - the last letter, is logically linked with the 1st: Aleph.

Ten out of 22 letters refer to things made by people –the Bes and Daleth, the 7 associated with work: Heh, Vov,

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[965] Avroham:Br.18:1-8; Lot: Br. 19:1-3

[966] After writing most of this work -~ 20k words- on the Aleph Bes, I looked at the famous 2 vol , 900+ p. work of D. DIRINGER 1968. Prof. Diringer was founder/ director of the Alphabet Museum, Cambridge England. He writes: "As to the order of the letters, various theories have been propounded, but here again it is highly probable that the matter has no particular significance." but adds, based on the 30 letter cuneiform aleph-bes found at Ugarit in 1949 that the letter-order in the Hebrew Aleph Bes "...goes back to the 15th century B.C. at the latest"p 170,v.1. He cites M. DUNAND, 1946, as the source of the idea that the letter zayen ז is connected to Hebrew root zn & means balance; tet ט: a ball of wool or cotton; tsade צ is connected with swd & may mean fishing hook, fishing rod, from p.169.

[967] Also, the wool comb- Heh-ה -and ball of yarn - Tes ט - tell us indirectly they had sheep – and were shepherds who made wool products.

[968] It should be clear that the initial domestication of the Bactrian Camel was closer to Bactria than Northern Mesopotamia. [See footnote 907]

[969] A. There is a close link between the word for "month" and "new", e.g.: "in the second month-בַּחֹדֶשׁ הַשֵּׁנִי" "There arose a new king-וַיָּקָם מֶלֶךְ־חָדָשׁ" [Br. 7:11 & Ex. 1:8, respectively] in the Chumash–and throughout the Bible. The link is the renewal of the moon, with the months starting at the first appearance of the new moon – not at the full moon. B. This is a good place to note the three '7''s that are obserbably built into the natural world. 1. The most obvious is the 7 day length of the phases of the moon: new→half→full→half→new. Tho' the actual length is 7 & 3/8th's days, as a practical matter, the moons exact phase, changes during the course of the night – with each night longer thatn 3/8th's of a day. 2. The next most obvious 7, is that when the spring equinox occurs in the 1st lunar month, the fall equinox will occur in the 7th lunar month. 3. The 3rd '7' is the number of regular moving heavenly bodies – that move independently of each other:Sun, Moon Mercury, Venus, Mars Jupiter & Saturn. These 3 "7's" that are built into the structure of the observable world are 3 natural pillars of the Sabbath. The 7 moving heavenly bodies are distinct from the fixed stars – that maintain a fixed order with respect to each other -the 8th Heaven – above the ordinary natural world. [see in this sefer BOWING SEVEN TIMES --BUT NOT EIGHT]

[970] It is worth noting here – for further investigation – that there are at least two other constellations that may be linked to the Aleph-Bes – Aquarius – the water carrier – & Pisces – fish- which would be linked to mem מ & nun נ respectively. But when they were named/recognized/ connected with these ideas & how they would fit requires further research.

[971] The Academics say Heh is from an Egyptian sign for a person in exultation or the like – no mention of a comb of any type.

Zayin, Ches, Tes, Lamed and Tsadik, and the last letter, Tuf. Ten of the 22 are also entirely natural: The 7 parts of the human body, plus Mem, Nun and Somech. That leaves two: Aleph and Gimel – the two domesticated animals – that are effectively part natural and- by selective breeding and special training - partly 'made by people'.[972]

There are no letters specifically associated with city life—like gates and walls or streets. There are also no letters specifically associated with farming- like plough or sickle or grain or vineyards or even bread. The only food references – are water, springs, domesticated animals, fish and trees. There are no letters specifically associated with sea travel – like ships or sails or oars. There are also no letters associated with kings or "gods" or exotic animals or the sun or moon or planets.

The people who first used the Aleph-Bes, included in it-- by what is there and what is not there-- a description of what they were about and what they were not about. They were peaceful pastoralist-merchants – like Avroham Avinu – connecting the cycles of Heaven and Earth and generation to generation. The absence of realistic images of animals suggests avoidance of even the appearance of idol worship. The balance scale indicates they engaged in commerce. The low-profile, long-base – long-beam design of the scales indicates selling heavy items – like bails of wool, jugs of oil and baskets of nuts. These just scales—that were designed for portablity[244] were –like the lunar-solar calendar that they lived by -- a link between Heaven and Earth.[973]

They sold wool in its various phases of production from combed raw wool to balls of spun yarn. Traveling regularly between upland wooded hills and the relatively treeless, lowland river valleys, they probably also sold strong, durable, insect-repellant cedar and cypress wood[974] and their fragrant sap[975]. The same heaven-linked scales and travel pattern put them in a good position to collect or buy the minerals and metals of the mountains and sell them to peoples of the plains -- where even ordinary rock was often scarce.[976] These, together with other plant and animal specialties of the forests and mountains might've been traded for the flax and storable grains of the lowland farmers.

Though they traveled long distances on a regular basis, they were not nomads. They usually lived in houses—with doors and at least two rooms-- for a substantial part of the year.[977] The skills of women—who had a space of their own in one of those two rooms-- were highly valued -- in processing wool and making yarn, fabrics and clothing. Women also prepared food[978] and watered the animals[65] as needed. Of course, women brought children into the world and cared for them when they were little[979A,B] - but we don't need the Aleph-Bes to tell us this.

Their fixed homes were probably at mid-altitude[980] – in spring and fall- which would become times for the most important religious festivals—with all family members present. It would be the best place for 'lambing' – shortly before the time that would be for Passover- and wool plucking—with all hands available. It would also be the place to grow vegetables, fruit trees - including olives and almonds- and grape vines.

This mix of mountains, plains, forests and farms, finding, making, weighing and trading - and the diverse peoples that they encountered at different times of the year-- put a premium on multi-dimensional intelligence: qualitative & quantitative- and linguistic ability. Their regular travels also put them in a good position to compare the "religious cultures" of the different peoples that they met. They could appreciate more than those who were tied to one place what was real and what was not. They may have been responsible for spreading the "Semitic calendar" – that prevailed in the time associated with the Biblical Noah, Shem and Ever.[981] It was based on observable phenomena and necessary human activities in each month—not on supposed needs of imagined "gods" – that often differed from city to city. This calendar, like the Aleph-Bes- was not built on prior models in Egypt – where the geography, climate and pattern of seasonal activities were very different.[982, 888-B,C,D]

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[972] Today fish & trees are also 'partly made by people',by selective breeding but 4k yrs ago, this was very small compared with domestication of cattle & camels.

[973] The 22 letter set has another set of distinctions—of what is "there and not there": As we've already noted[895] the 6 BeGeDKeFeT- ב ג ד כ פ ת letters each have 2 sound values: plosive & fricative. Vov-ו has 3 sounds: a voiced fricative in the range of 'v' –'w'; 'o' as in tote & an 'oo' as in toot- all 3 with the lips in a similar position. The 21st letter: Shin-ש has 2 forms. The 1st – in Aleph-Bes order has a dot above the right arm of the letter & is pronounced Sh – as in ship; the 2nd – in Aleph-Bes order is Sin, pronounced like an ordinary s – as in sip & has a dot over the left arm. As ordinarily written, most syllables lack written vowels. Missing vowels & alternative pronunciations of consonants mark a system of "shorthand" designed to write & read by those already familar with spoken Hebrew.

[974] G. CAUDULLO, D. DE RIGO, 2016

[975] P 25, Syria Mesopoatmia, K. NIELSEN, 1986

[976] Br. 11:3 "…and they had brick for stone…וַתְּהִי לָהֶם הַלְּבֵנָה לְאָבֶן…"

[977] Abraham was unusual in this respect. He left his father's house [Br.12:1]& lived in a substantive tent [e.g. Br.12:8] for much of the rest of his life. In the famous scene where Abraham is sitting: '…in the opening of his tent … פֶּתַח־הָאֹהֶל…' (Br.18:1)the Hebrew says opening, not door or doorway.[F.JOSEPHUS, 93CE,] has him sitting in the αὐτοῦ αὐλῆς courtyard of a Greek style house].His nephew Laban, lived in a house in the same - N Euphates area - Abraham had come from.

[978] " Sarah…Make ready quickly three measures of fine meal, knead it, and make cakes." וַיְמַהֵר אַבְרָהָם הָאֹהֱלָה אֶל־שָׂרָה וַיֹּאמֶר מַהֲרִי שְׁלֹשׁ סְאִים קֶמַח סֹלֶת לוּשִׁי וְעֲשִׂי עֻגוֹת: Br.18:6

[979] A.On nursing & weaning children, see Br21:7-8 and, see in this Sefer: GEMILUS CHASADIM …"CAMEL KINDNESS". B. A good description of a "woman of valor" from 3000 years ago in the Torah is found at Aishes Chayil, Prov.31:10–31—which is arranged according to the order of the Aleph-Bes. The only woman in Tanach who is referred to as an Aishis Chayil-אֵשֶׁת חַיִל is Ruth [Rth 3:11]

[980] A. With all of this, where were their homes – near what landmark? The usual understanding is Avroham & Family- incl. his ancestors -- were from '…Ur of the Chaldees-בְּאוּר כַּשְׂדִּים…"Br.11:28-the great, ancient city of Ur in SE Mesop. But that city wasn't populated by Chaldeans in the 2k yrs centered on Avroham's life. It's also not on the 'other side' of the Euphrates from Canaan.
'… fathers dwelt on the other side of the river…בְּעֵבֶר הַנָּהָר יָשְׁבוּ אֲבוֹתֵיכֶם מֵעוֹלָם תֶּרַח אֲבִי־אַבְרָהָם…
[Josh 24:2-3]. Most likely place for Ur – if it was a place or city- is in the Harran area- in NW Mesop. This is consistent with the name of Abraham's nephew 'Milcah, she hath also born children unto thy brother Nahor…Kemuel the father of Aram and Chesed…& Bethuel.בְּתוּאֵל ',Br.22:20-22.See C.GORDON,1958&1977[citing 'Ur in Haran' p. 42 H.SHANKS, 1976]& G.RENDSBURG, 2019; & rebuttal by H.SAGGS,1960; The word אוּר Ur means fire. In T.Onkelos, it's a place name [p.62,GROSSFELD, 1988];in T. Neofiti 1, it's 'furnace of fire'[p.85, MCNAMARA, 1992; in T.'Pseud Jonathan, there's a story of Nimrod & the fire – but no place name. [p.51,MAHER,1992]; Saadia Gaon has כִּבְשָׁן – furnace; p.100, SAADIA GAON, 2020; Septuagint has 'χώρᾳ τῶν Χαλδαίων' 'chora' land – not a city; Syriac Peshita has 'ܟܫܕܝܐ ܒܐܘܪ' -in Ur Caldea'.p20, PESHITA,1977;T.H.ROMENY; nothing found for Akilas/Sumchas:p264 P.S.CHIA, 2021. B. Maybe there was a lime kiln/metals furnace in the area then. ASA. C. Kazane Hoyuk appears to have been a major town in the plane a few km SE from the center of Urfa, from 3rd mill BCE, A.CREEKMORE,2008 Incl. more from this &related s'rces.

[981] The non-theophoric Semitic Calendar was noted in works of M. E. COHEN.

[982] See, e.g.: A.V. NEMIROVSKAYA & A.G. SOUSHCHEVSKY, 2016

These people were the first developers of the Aleph-Bes. Just as they spread the Semitic Calendar – free of idol worship- they spread their remarkably efficient system for recording and communicating important ideas, information and what they saw as a better way of life.

In this scenario, they- both men and women -- would have also sold and promoted writing itself- and how to read it. One could imagine they'd write blessings for people – with their individual names- on processed animal skins[983] – to post on the walls and gates of their homes[984]- or wear on their bodies.[985] They'd also teach these people – neighbors and customers, near and far -- how to read the blessings and teach their children to recite them. The value of such written documents per unit weight was probably very high compared to most other commodities – and they could be produced by most members of a family who could read and write. They could also be made indoors - at night, or when the weather was not good for outside work.

The Aleph-Bes is so beautifully and intelligently constructed that - with the pictorial character of each letter and the many, easy to remember, letter-to-letter associations—an adult or child of ordinary intelligence who knew the spoken language, could learn to read the letters in a matter of hours—while walking – and write them in a matter of days – or less. Since, unlike ordinary letters, the Ksav Ivri forms were not arbitrary shapes – but letter-linked pictures- a student who remembered the name of the letter could far more easily remember how to write it. With 10 letters bilaterally symmetric, 3 more with deliberately reduced stroke count[986] and another 3 – animals without eyes - writing was even easier. Ksav Ivri didn't need and wasn't the original product of scribal schools. It didn't need schools at all.

At home, both women and men used the Aleph-Bes to teach their children not only basic blessings and sayings- and how to write their own names- but also the stories, genealogies and ideas that were important to them. The first chapters of Bireishis –'In The Beginning' are probably good examples of what they valued in written form.

PART 4: The steps involved in Inventing the Alpeh Bes.

4.a Sounds and names of letters: With all of these good qualities, we should include at least some comment on the actual process of inventing the Aleph Bes. First, an inventory of the sounds that would be needed would be drawn up. In this process it would be clear that with the Semitic language then used, some sounds would not be needed at all – like clicks[987] whistles[988] – or sounds that combine 'gh' and 'w'[989] – to give just a few of many possible examples. Tonal indicators – like those in some East Asian, African and indigenous American languages would also not be needed[990]. Most vowels could be understood from the context—so distinctive letters for most vowel sounds would be unnecessary. Similarly, it would be noted that several sounds have two versions – plosive and fricative – and when each was called for would generally be obvious to native speakers from the context. So, one letter could serve both.

Some sounds were already affixes – like the 'N' sound as a suffix associated with plurality and fecundity. All the existing affixes would obviously be needed and their names and pictures should, if possible, be associated with their pre-existing grammatical function.

With all of this in mind, a list of possible letter names would be drawn up for each of the required sounds. Each named letter should be simple to draw, easily recognized and distinct from other letters. Both 'nun': *fish*- and 'nachosh': *snake*- would be among initial candidates for the 'n' sound. *Snake* would be easy to draw—but might be confused with the wavy sign proposed for water. It also has nothing to do with plurality or fecundity. On these factors alone, *fish* would win over *snake*.[946-B] Fish would have the additional advantages of being less threatening and generally good for food. It would also have a natural place in the order of the Aleph-Bes – near the letter – the affix-'m' – *from*—which would most reasonalby fit a letter name associated with *water*.

4.b Iterative process. With these types of considerations -- in an iterative process- the letters would be selected and the order and orientation established -- bearing in mind suitable didactic-mnemonic methods that would make the Aleph-Bes easy and enjoyable to

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[983] The use of animal skins for writing socially important documents is supported by the evidence of works like "Codex Nuttal" " probably made 14th century[CE] and is composed of 47 sections of animal [deer] skin [each section] with dimensions of 19 cm by 23.5 cm. [11.35m total length]The codex folds together like a screen and is vividly painted on both sides, and the condition of the document is by and large excellent. It is one of three codices that record the genealogies, alliances and conquests of several 11th and 12th century rulers of a small Mixtec city-state in highland Oaxaca…" BRITISH MUSEUM object/E_Am1902-0308-1 https://www.britishmuseum.org/collection/object/E_Am1902-0308-1 https://ia801004.us.archive.org/32/items/gri_33125011146541/gri_33125011146541.pdf

[984] Dv. 6:9 "And you shall write them on the doorposts of your house and on your gates. וּכְתַבְתָּם עַל־מְזוּזוֹת בֵּיתֶךָ וּבִשְׁעָרֶיךָ"

[985] Dv. 6:8 "And you shall bind them as a sign upon your hand, and they shall be as frontlets between your eyes.:וּקְשַׁרְתָּם לְאוֹת עַל־יָדֶךָ וְהָיוּ לְטֹטָפֹת בֵּין עֵינֶיךָ "

[986] Daleth is a triangle, instead of a more realistic rectangle for door; This triangle can be drawn in one continuous stroke – without lifting the pen from the page. Heh & Chaf have only 3 "fingers" – instead of 4 or 5; They can be written, respecivley, in only 3 & 2 strokes. 11of the letters require only one continuous stroke. The avg. # of such strokes/letter is only 1.9. There are no 'Tagin' or similar elements on these letters. See T. Bav. Menachos 29B[1] & M. PERANI, 2022 on 'Tagin' & '# OF STROKES TO FORM LETTER' & "KSAV IVRI' Columns of ADDENDUM B.

[987] Many SubSaharan langauges include distinctive clicks R. HUIJBREGTS, 2017

[988] Many peoples use whistle sounds as regular parts of speach J. MEYER, 2021

[989] The original word that preceded the English word 'war' and the French word 'guerre' may have involved such a combination.

[990] Mandarin Chinese, spoken by 1.1E9 people in 2022, has 5 distinct tonal patterns; Punjabi, spoke by ~130E6 people – mostly in the Indus valley area, has 3 tonal patterns; Yoruba – spoken by ~50E6 people in Nigeria,- W/Central Africa, has both tones & whistle sounds. [Wikipedia articles on these languages 12/12/22]. "Tonal languages, particularly those with complex tones, are rare and accounting for less than 10% of the world's languages, according to the Phonotactics Database of the Australian National University. Nevertheless, the global distribution of these languages produce an interesting pattern, with seemingly obvious associations. Tonal languages are more likely to be found in hot, humid regions like Southeast Asia, New Guinea and Sub-Saharan Africa, and highly unlikely to be found in arid regions like the Gobi, Australian, Saharan and Arabian deserts." ZUI, July 11, 2020; citing : C. EVERETT, ET AL, 2015.

learn.[991] Its first function – as already noted – would be to write out the first chapters of Bireishis – which was probably already known by heart by many of the older adults in the community.

4.c The direction of writing is also important: Should it be horizontal or vertical? Left to right or right to left? There is more space between our eyelids for horizontal eye movements – so horizontal lines of characters would be more attractive for sustained reading. Should the lines start at the top or bottom of the page? If we start at the top, we can rest our hand on the page without obstructing – or smearing- what we've just written.

The same consideration of not smearing the ink might apply to the direction of writing. If we are right–handed – we can rest our hand on the document to the right of the lettering if we write from left to right. Sumerian, Eblaite, Akkadian,Elamite and Ugaritic[992] cuneiform are all written from left to right[993] – and so are most of the alphabets of the world.

Most of the Hebrew letters that are not bilaterally symmetrical face to the left and Hebrew is written from right to left.[994] This has suggested to some that the inventors of Hebrew were following the example of techniques used for carving letters in stone. For that, a right handed person would hold the hammer in the right hand and cut the stone from right to left. But the cuneiform that came before the aleph-bes and which was far more common than carving in stone, was written from left to right.

We might then imagine that the inventors of the aleph-bes and/or most of those who would use it to write with – were left handed – and it was designed to be easier for them to write without resting their hand on the freshly written letters.[995] This might be important if the new writing was intended for speed. But it was created to communicate sacred ideas – with each letter carefully formed. It was designed with the intention that the hand would be positioned primarily under each letter as it is written – and not so much to either side. [SEE PHOTO] So the question of 'handedness' wasn't relevant.

HAND & PEN POSITION WHEN WRITING A SEFER TORAH
AT 16 SEC INTO 2:37 VIDEO, CROPPED
כתיבת ספר תורה
WRITING SEFER TORAH ASHKENZAI
https://www.google.com/search?client=firefox-b-d&q=Writing+Sefer+Torah+Ashkenzai#fpstate=ive&vld=cid:2f2ff415,vid:wzHwz9BUFtc

The most likely reason is not that the inventors were left handed but that there is a general idea that when doing good things we start on the right side.[996] Not only is each line written from right to left, but the Torah scroll is also written starting on the right hand end of the scroll and working column by column to the left. The columns are generally relatively narrow – so that the work of writing involves relatively short lines in front of us and not long lines that would make it difficult to hold the hand under each letter as it is written. It is also easier to read shorter lines without moving the head from side to side for each line.

PART 5: The spread of KSAV IVRI- כתב עִבְרִי - in the world

Starting with these first chapters of Bireishis, the Bible grew to the dimensions that we have today – all written initially in the Aleph-Bes. The Talmud and its associated works -- exploring the meaning of the Bible -- were also written in the Aleph-Bes. After the Bible and Talmud, most of the commentaries on them- for the next 1500 years- were written with the same or similar letters.

The Bible – with its many translations-- is the most widely read and printed book of all time.[997] Today, the letters that the Bible is most often read in are variations of the so-called Latin alphabet.[998] Yet only a minute fraction of this reading is actually in Latin. The very same "Latin" letters are also called the English alphabet. This situation gives us some insight into what may have happened with the Aleph-Bes. It was originally developed by the transhumantic shepherd–merchants of North-West Mesopotamia[999] – as suggested by the names, order and de-

[991] A very diff. view of the Aleph Bes's invention, is, e.g., John C.CLARKE, 1883,'4.
[992] A.1 "Fairly early [pre UrIII] in the development of cuneiform, a 90 degree rotation in the direction of writing became established, so that the ancestral pictograms face upward and the lines of text are horizontal, reading left to right.... [Even]the Ugaritic [cuneiform alphabetic] tablets (in the long version of the script)...left-to-right practice seems to have been taken over from Mesopotamian cuneiform along with the medium and technique.[P. 24, PDF 45] A.2 "There are two varieties[of Ugaritic Cuneifrom for the consonantal – non-syalabic aleph bes] : a longer one, written left to right, used in the city of Ugarit itself; and a shorter one, containing the twenty-two letters still found in Hebrew, usually written right to left. The few texts using this font are nearly all from outside Ugarit."[p.20, pdf 41] P.T.DANIELS, 1997. B. B. STUDEVENT-HICKMAN, 2005 explores conflicting views on the time of the rotation from vertical to horiztal writing in a 30p article. He concludes that subsantial changes – from vertical-[top to bottom] to left to right writing took place in both the Sargonic [2334-2154BCE]& Kassite [1595-1155] periods. None of this cuneiform writing was right to left [except Ugaritic Hebrew. see A.2 supra]
[993] "Akkadian script is read from left to right with the notable exception of the Code of Hammurabi, which was read from top to bottom, representing a purposefully archaizing attempt to mimic the Sumerian writing of the early third millennium." P221 Ch 8 Akkadian and Eblaite, JOHN HUEHNERGARD AND CHRISTOPHER WOODS Egyptian hieratic is right to left p 165 Ch 7 Ancient Egyptian and Coptic Antonio LOPRIENO; "As in Mesopotamian cuneiform and other adaptations of it, [Elamite cuneiform] writing runs left to right, top to bottom" p 67. Vocab.: sinistrograde[toward the left= R to L]; dextrograde [toward the right=L-to-R]; boustrophedon [as cattle plough :-back & forth]; Ductus: includes the direction, sequencing, and speed with which the strokes making up a character are drawn.
[994] The He- ה - a wool comb, has prongs facing downward & away from the user at ~45°– as it might be positioned to comb the dirt and twigs out of freshly plucked wool. The Tsadi –צ - as a fishing pole and line –has the pole in front – to the left - and the string behind – as it would look if we were about to cast the line into the water. The Nun-נ– fish -- faces upward. The Lomed-ל – a shepherd's crook, faces as it would be if extended in front to catch the neck or legs of a sheep – including lifting it, if it's fallen. This would account for its angled downward position – in addition to saving space compared with a more horizontal orientation.

[995] For a good review of the heritability of handedness and the percentage of left handed people the genaral population, see I. C. MCMANUS, ET AL, 2013
[996] 1st explicit show of the superiority of the right hand is when Jacob deliberately crosses his arms to lay his right hand on Ephraim's head giving him the superior blessing – even though Ephraim wasn't Yosef's first born.Br.48:13-20
[997] A. The complete Bible [which usually includes the Christian scriptures in such statistics] is available in translation in 717 languages spoken by 5.75 billion people https://www.wycliffe.net/resources/statistics/ B. The best-selling book of all time is the Christian Bible. ...research conducted by the British and Foreign Bible Society in 2021 suggests that the total number probably lies between 5 and 7 billion copies.
[998] " ISO basic Latin alphabet " is also called the English Alphabet.
[999] A.This includes Harran where Avroham left his family to come to Canaan: Br.12: 4-5;where Jacob went -- to find a wife, in the land of his uncle Laban Br.27:43, 28:10,29:4 & Eliezer went to find a wife for Yitschak:Br.24:10-29.B "It is a

sign of the letters. It was picked up by their more settled, urban, agriculturist neighbors with whom they traded and then adopted by the Phoenicians[1000] – directly from the pastoralists, indirectly from the city dwellers and farmers – or both. The pastoralists, their more stationary neighbors and the Phoenicians all had a similar 'Semitic' language that was well suited to the Aleph-Bes.

The Phoenician cities were on the coast of what is now Lebanon. This gave them convenient access to the Cedars of Lebanon[666] for both ship building and trade in timber. They also had a rich coastal seabed for the special snails needed to make an extremely valuable blue-purple dye.[804] With, timber, purple dye – and the Aleph-Bes - they promoted their ship-based commerce to Israel, Egypt, across the Mediterranean Sea and beyond.[1001]

Traveling by ship they had something in common with their pastoralist predecessors and contemporaries: The weight of the documents they needed to record their business transactions made a difference: A document written on papyrus or animal skin would weigh only a small fraction of the same document on clay. Almost nothing that they wrote was on clay or stone and almost everything they wrote—including their literature -- was not recopied from generation to generation and perished with time in the humid air of their coastal cities.[1002]

Wherever the Phoenicians went, the people they traded with picked up the very convenient Phoenician system of writing and modified it as necessary to express their own language. In this way Phrygians,[1003] Greeks[1004] and Etruscans picked up the Aleph-Bes and kept the names, shapes and order of the letters close to the original.[1005] The Romans picked it up from their predecessors – including Phoenicians, Etruscans and Greeks-- and made modifications to suit their own language and interests.

The Roman writing system was adopted by the Roman Catholic Church – which used Latin- the language of Rome- to spread their version of the Bible and related writings throughout Europe. The many peoples of Europe – who were largely illiterate prior to the coming of the Church[1006] -- began to use this Latin version of the writing system. They named it after the first two letters of its Greek ancestor - the alphabet – with many of the letters still identifiable in shape and sound with their source in the Ksav Ivri-Aleph-Bes. Europeans –mostly English, Portuguese, Spanish and French – spread the Latin alphabet across the world.

A similar pattern of development and dissemination occurred with the Eastern Churches. The Bible – now in Aramaic and Syriac -and an alphabet with the same roots as the Aleph-Bes – with 22 letters -was spread across the northern Middle East & into India.[1007] With the closely related Sogdian version, it reached Mongolia and China. Over half a millennium later, other Eastern Churches – with the Church-created Cyrillic alphabet built on Greek and Hebrew[1008]- spread their version of the Bible among the Slavs and neighboring peoples of Eastern Europe and Western Asia. The Nabateans[1009] and others spread a modified form of the Ksav Ashuris[1010] version of Hebrew – which developed into Arabic and was spread with Islam across most of North Africa and much of Asia.

The result of all of this is that the great majority of the people of the world today who can read at all, can read a

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strange coincidence that the camel- owner Abram is said to have emigrated from Haran…a term that etymologically means "highway" and "caravan" (*CAD* 6:106, s.v. "ḫarrānu"),which in turn is part of the Sumerian camel name am.si.ḫar.ra.an p. 227, M.HEIDE & J.PETERS, 2021.citing Y. KOBAYASHI,. 1992. C. CAD Vol 6, Ḥ pdf 120-7 covers meanings of Harran & has 18 examples of 'caravan' & 45 of 'road' D. It also includes 'The Mountains of Ararat' – where Noah's ark came to rest: Br.8:4 [See p 173]

[1000] 'What the Phoenicians actually called themselves is unknown…[maybe] Canaanite. The name Phoenician, used to describe these people in the first millennium B.C., is a Greek invention, from the word *phoinix*… perhaps an allusion to their production of a highly prized purple dye.' METROPOLITAN Museum Of Art, 2004

[1001] See IKi.5:1-9. They traded beyond the Straights of Gibraltar to the west coast of Africa & even to what is now England.

[1002] "…the corpus of Phoenician inscriptions …[is over]10,000 objects…[but] many inscriptions are highly formulaic, and present virtually the same stereotyped wording, with the exception of personal names. …The corpus is also essentially monumental, consisting of funerary or commemorative stelae intended for public display…. very few documents from daily life are known, which ought, theoretically, to reflect more faithfully the language as it was actually spoken. …Phoenician appears to be linguistically most closely related to Old Hebrew, as attested in inscriptions and in the Hebrew Bible, for example. "Pdf p 3 "Ongoing excavations at the site of Idalion have yielded a sizable archive of administrative documents from the Persian period, …it is not monumental in character, and thus better reflects …everyday life."Pdf p5, F. BRIQUEL-CHATONNET& R. HAWLEY, 2020.

[1003] The Phrygians lived in W. Central Anatolia & may have come in contact with the Aleph-Bes through direct trade with people in NW Mesopotamia. The same may be true for other societies in what is now southern & eastern Turkey. It's not necessary to understand that they learned the Aleph-Bes from the Phoenicians.

[1004] "The Ionians also call paper 'skins'—a survival from antiquity when paper was hard to get, and they did actually use goat and sheep skins to write on. Indeed, even today many foreign peoples use this material." HERODOTUS. [484 – c. 425 BCE] Histories, Bk 5, ch.59. In describing how the eastern Greeks in W. Asia Minor learned the Aleph–Bes from the Phoenicians. The Ionians are the same as Javan/Yavan- יָוָן in Hebr: Br.10:2'The sons of Japheth; Gomer, and Magog…and Javan…'."…But there are some who attribute the invention of letters to the Syrians, from whom the Phoenicians learned them & communicated them to the Greeks when they came with Cadmus into Europe; hence the Greeks called them Phoenician letters. To these that hold this opinion, it is answered that the Phoenicians were not the 1st that found out letters, but only changed the form & shape of them into other characters, which many afterwards using the name of Phoenicians grew to be common."DIODORUS SICULUS[90-30BCE]

[1005] Greeks kept letter names of letters close to the original – but it isn't clear if Phrygians & Etruscans did. Greek letter names:*alpha, beta, gamma, delta* don't have the original meanings – like ox, home, camel, door.

[1006] The Romans themselves spread literacy in Europe wherever they established their military and political control – but it was a relatively small part of society that could read or write – and when the Romans military withdrew, the literacy rate shrank to even lower levels. Jane STEVENSON, 1989.

[1007] Close to 3 centuries before the rise & spread of Aleph Bes based Aramaic & Syriac Christianity to India – the Brahmi script "remodeled" version of the Aleph Bes –was used by Emperor Ashoka to spread Buddhism across his empire in ~260-232BCE. see G.BUHLER 1898. Brahmi was a main writing system in India for 500+ yrs. – but was subsequently transformed into Devanagari script -very different from Brahmi. But, see footnote 962 on link of Devenagari with Kuf ק. See R.CONINGHAM, 1996, for even earlier uses of the Brahmi version of the Aleph Bes in Sri Lanka. However, "…the Brahmi alphabet of India possibly could be described as modeled after the Aramaic alphabet, but not copied from it…" The Brahmi letters are grouped by sound, not like the Aleph Bes. Aramaic –Aleph-Bes – letters were used for official writing throughout the Achaemenid/Persian Empire of Darius[550-495 BCE] from Egypt to Afghanistan. Richard N. FRYE, 2006.

[1008] It also included some newly created letters – based on the earlier Glagolitic alphabet – and was subsequently modified to give some letters a more Latin appearance. The history of these alphabets is instructive for understanding how, why and by whom new and different writing system are developed and promoted.

[1009] A. Nabateans were one a nomadic Bedouin tribe that roamed the Arabian Desert – between the Euphrates & Red Sea-- in search of pasture & water for their herds. They emerged as a distinct civilization & the 4th & 2nd centuries BCE, with their kingdom - centered at Petra in what is now Jordan. It involved a loosely controlled trading network that brought considerable wealth & influence across the ancient world. B. This is the usual understanding of this word, however in the book "Nabatean Agriculture", it refers to the indigenous people of Mesopotamia – incl. their ancient pagan traditions. J. HÄMEEN-ANTTILA, 2006, 2003. In J.H-A, '06,[408 p] place name Nabatean [w/o Agric.] occurs 272×; 'Harran..' 87×;Kasdanian 85×;Iraq..77; Babylon..49×,Chaldae…44; Aram…44; Ninev…21; Bag…13; Alexandr… 6; Nisibis 2; Sumer…2

[1010] This is the name given in the Talmud to the Hebrew writing that has been used for the Bible since the time of Ezra - Similar to the square script Hebrew of Today. See Talm. , Megilla, 17-18 Bavli: Megilla 12, Yerushalmi

BACK OF OFFICIAL CHINESE CURRENCY SHOWING NAME AND DENOMINATION IN PINYIN. FRONT IS IN CHINESE CHARACTERS – WITH VALUE, SERIAL NUMBER AND YEARS IN "ARABIC" NUMBERS.
http://en.people.cn/n3/2020/0709/c90000-9708943.html

script that is derived from Ksav Ivri.[1011] At least six of these scripts: Latin, Cyrillic, Arabic, Greek, Syriac and Hebrew have letter names, forms and order that, in combination, are clearly reminiscent of Ksav Ivri. As already noted,[997] the most important work initially composed in Ksav Ivri- the Bible- is also the most widely read, the most widely printed and the most widely translated of all books- both historically – and in our day. In each of these categories, it is about an order of magnitude greater than any other title.[984]

There are a reported 7,000+ distinct languages in the world.[1012] Close to 90% of them use the Latin, Arabic and Cyrillic scripts for the written form of their language.[1013] Probably over 5,000 use the Latin script alone. Most of these are in sub-Saharan Africa, The Americas, Australia and Austronesia – including Indonesia the Philippines, and Polynesia.

PART 6: What's the best name for this set of letters?

In the realm of quantity and quality, it should be clear that a large fraction of unique words that have been found written in what looks like Ksav Ivri are from actual

SOME NOTES ON THE ALEPH-BES AND NUMBERS

We have seen how Aleph-א became the 1st letter & how at least 8 of the 1st 10 letters acquired their place in the Aleph-Bes directly through their numerical associations. The remaining 2 letters - Vov-ו & Ches-ח - would acquire numerical values indirectly – through their associations with their neighbors before & after. The 11th letter, Kaf-כ, is sequentially associated with its neighbors before & after. However, its meaning -- connected with hands & feet -- suggests another numerical association— 20 – the total number of fingers & toes. This is particularly apt as it follows yud-י– for finger – in the 10th place. The result of this jump- from counting by ones to counting by tens – suggests that the next letter, Lomed-ל should not be 12 or 21, but 30. Mem-מ = 40, & we continue by tens until the 19th letter, Kuf-ק = 100. What follows? We shift from counting by tens to counting by hundreds. The next letter, Resh-ר, is 200. The highest 1 letter value in this system is Tof-ת[895] - for 400.[A] It's a simple way for representing numbers by combinations of letters. With only 3 letters, any number from 1 to 499 could be accurately represented. The Greeks in the classical period used a similar system – with Greek letters in an order & names similar to the the Aleph-Bes. The author does not yet know when this system was developed.[B]

English/Arabic numerals 4,5,6,7,8 & 9 appear to have been derived from Ksav Ivri & its near relatives.The 6 & 9 would need to be rotated 180°. 5 could be derived from Ksav Ivri if written as a continuous line- just as the letter S came from Σ . The usual understanding is that these numerals came from Arabic modifications of Indian versions. Numbers 1, 2 & 3 apear to have derived from 1, 2 & 3 vertical or horizontal lines. Zero was a placeholder invented in connection with sexigesimal notation.[C]

POSSIBLE DERIVATION OF MODERN NUMERALS FROM KSAV IVRI & RELATED FORMS

MODERN LETTER	NUMERAL	SOURCE LETTER A	SOURCE LETTER B	DESCRIPTION	P.# IN BOOK
DALETH ד	4			A PHOENICIAN B ARAMAIC[1]	227
HEH ה	5			A PHOENICIAN B KSAV IVRI	227
VOV ו	6			B KSAV ASHURIS	228
ZAYIN ז	7, 7			LATE 1ST TEMPLE KSAV IVRI	228
CHES ח	8			PHOENICIAN	229
TES ט	9			B KSAV ASHURIS, 125BCE	229

A. In Br., 400 as a stand alone number, appears to be a byword for 'very many':Br 15:13 "… oppressed for four hundred years."; Br:23:15"…land worth four hundred shekels …";Br.23:16"…four hundred shekels of silver…";Br.32:6"…four hundred men with him.";Br.33:1"…four hundred men with him. So he divided the children…". In contrast, '300' occurs at Br.6:15 "…the length of the ark 300 cubits…"Br 45:22 "…but to Benjamin he gave 300 shekels of silver…"[both of these numbers are related to other numbers – the width of the Ark and the story of Yoseph and his brothers [See YOSEPH THE WISE, in this sefer.]. "500" occurs 3 times in Bireshis – but all 3 times they're part of a longer lifetime: Br.5:30;5:32; 11:11; occurences of "100", "200", "600", "700"; "800" & "900" in Br. are related to other numbers – mostly ages-- in the context. This suggest a time when the highest readily recounted number was based on the Aleph-Bes – when Tof stood for the highest single character number: 400 – & the last – or end point in a series. B. There is an early Greek symbol for zero – as a much smaller than usual 'o' in the (lower right corner) from a 2nd-century papyrus https://en.wikipedia.org/wiki/File:P._Lund._Inv._35a.jpg

Hebrew texts found in the Judean Desert. We have already seen- in Ugarit- that the 22 letter Aleph-Bes with a similar order and close to the same sounds that exist today, predates the known Phoenician inscriptions by centuries.[1014] We have also seen that the Phoenician letters – as exemplified by the letter Zayin ז– were developed from Ksav Ivri – and not vice-versa.[927-C]

The first use of "Hebrew" in the Bible is a reference to Abraham.[Br. 14:3]

[1011] A. Even in mainland China, where only a small fraction can speak or read English, Russian or Arabic, almost all children can read the Roman Alphabet : "Pinyin, an alphabetic system that uses the Roman alphabet, is typically taught to children in mainland China in Grade 1" LIU Yongbing, 2008. The offical Chinese currency has name & denomination in bold Pinyin capital letters. The leader of the team that developed Pinyin was ZHOU Youguang, 1991. He also wrote extenisvely on the history of writng systems, was a friend of Zhou Enlai & lived to be 111. See Victor H.MAIR, 2017, for bio & more on Pinyin. B. In India, where the writing system is based on Devanagari – a large minority can also read with English letters. C. A simlar situation prevails in Korea & Japan—where subtantial minorities can read English letters – though their main literacy is in non- Aleph-Bes derived writing systems. D. Chinese characters, used for writing in Vietnam until the early 20th century – were replaced – under Portuguese Catholic Missionary & French Colonial influence – with the Latin alphabet. E. It may be Chinese Character writing system kept 80-90% of the people illiterate for 1000+ years. "The mathematics of illiteracy has challenged Chinese leaders and educators since the turn of the 20th century, when China's illiteracy rate stood at roughly 85-90% [illiterate or recognizing very few characters] of the total population. Fifty years later that figure remained virtually unchanged."p3, H. ROSS, 2005 This also had the effect of increasing the % of people who were descendants of the literate elites – as these elites were better able to support their families and children – particularly in times of the all too frequent famines and floods. Nonetheless, at the beginning of the 20th century illiteracy in china was ~ 4X higher than the alphabetic US and Western Europe and ~2x higher than the 'phonetic-syllabic+Chinese characters' Japan. "In the latter, school attendance reached nearly universal levels, and mas literacy with it, mass literacy was reached by the early 1920's.[involves some estim. by ASA] p.12, RICHARD RUBINGER 1992.

[1012] ETHNOLOGUE 2022

[1013] OMNIGLOT 16.08.22 ; DON VAUGHAN, 2022

[1014] There were actually 30 letters in the Ugaritic abecedary as opposed to 22 in the Aleph-Bes. The order of the Aleph-Bes letters is identical but there are 8 more letters. 3 of these additional letters are added after the last letter Tof. 5 are dispersed within the order of the usual 22. " Dennis PARDEE, 2007

'...and it was told to Abram the Hebrew...'
וַיָּבֹא הַפָּלִיט וַיַּגֶּד לְאַבְרָם הָעִבְרִי וְהוּא שֹׁכֵן בְּאֵלֹנֵי מַמְרֵא הָאֱמֹרִי אֲחִי אֶשְׁכֹּל וַאֲחִי עָנֵר וְהֵם בַּעֲלֵי בְרִית־אַבְרָם׃

The early sages of the Talmud comment on this :

רַבִּי יְהוּדָה וְרַבִּי נְחֶמְיָה וְרַבָּנָן, רַבִּי יְהוּדָה אוֹמֵר כָּל הָעוֹלָם כֻּלּוֹ מֵעֵבֶר אֶחָד וְהוּא מֵעֵבֶר אֶחָד. רַבִּי נְחֶמְיָה אָמַר שֶׁהוּא מִבְּנֵי בָּנָיו שֶׁל עֵבֶר. וְרַבָּנָן אָמְרֵי שֶׁהוּא מֵעֵבֶר הַנָּהָר, וְשֶׁהוּא מְשׂוּחַ בִּלְשׁוֹן עִבְרִי[1015]

– Rabbi Yehudah says: "The entire world is on one side and he is on the other side." R. Nehemiah says: "Since he is a descendent of Eber." The Rabbis say: "That he is from the other side of the Euphrates[1016] (Josh. 24:3), and that he speaks Hebrew."[1017]

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"Many modern scholars have argued that the term *ivri* is cognate with the Akkadian term *Ḫabiru*/*Apiru*, a group of people of lower economic and social standing who roamed the vast plains of Mitanni,[1018] Syria, and Palestine as serfs, brigands, half-citizens, and mercenaries through the second millennia and until the onset of the Iron Age." [1019,1020,1021]

Consistent with this unfavorable image, the Biblical Joseph is called an Ivri as part of an effort to belittle him.[1022] Ivri identified Yosef as a member of this marginal society. Our sages of the Talmud don't call these letters Ksav-Yisroel, Ksav-Avroham, Ksav-Shem or anything else that would tie it to the Jewish people. It was the language of the pastoralists – the language of people who were more like the Bedouins of today than the city dwellers and farmers of antiquity. The independent shepherds were normally almost anathema to the planters – as their flocks were usually uncontrolled and would eat the farmers' crops. Avroham, Moshe and David -- and their forbears and descendants – spiritual and physical - were different. They guided their flocks to places outside of the planted areas and muzzled their camels when they were in more built up places.[1023]

If they did cross the fields of the farmers, they would try to come at a time that the flocks would eat the residues of the harvest – and contribute to the fertility of the soil. In a special sense this tension between the independent transhumantic shepherds and the settled farmers is built into Biblical Hebrew. The root of the word for Shepherd – Resh Ayen - רע -- is the same as the root for "Bad". Resh Ayen – makes sense for Shepherd – Head+Eye – a mindful overseer of a flock – but why should it also mean "bad"? Because shepherds – who did not respect the planters crops –were bad news to the planters.[1024]

Considering that Abraham, "The Ivri-אַבְרָם הָעִבְרִי" and his family are traditionally the ancestors of the Arabs as well as the Jews and the name Phoenician was not a name the people who wrote "Phoenician" inscriptions gave to themselves or their writing,[1025] it would appear more appropriate to call this writing something closer to its self identified source: 'Ksav Ivri-כתב עִבְרִי' appears to be a better name. It links the writing with those pastoralists who first developed it in the order and with the letter names close[1026] to what we have today.

It's also the ideas and language of those Heaven-linked pastoralist – in the form of the Bible and its progeny– that energized much of the development and spread of this system of writing across the world. The name "Ksav Ivri- כתב עִבְרִי" does not say Jewish, Arab or Semite. It is the name given to the writing by the Talmudic Sages two millennia ago when it was still in use.[1027] These sages knew its great antiquity and the ageless importance of what it was used to write. [1028]

[1015] https://www.sefaria.org.il/Bereishit_Rabbah.42.8?ven=Sefaria_Community_Translation&vhe=Midrash_Rabbah_-_TE&lang=bi&with=all&lang2=en

[1016] A. Haran is both Avroham's brother & a city in the time of Shem & Ever- on the other side of Euphrates but not the other side of Tigris –Cited in:BR. 11:31-2;12:4-5;27:43;28:10;29:4. Cited in Br. more than any other city. Note: names are the same here in Engl. but diff. in Hebr.: ה for the son; ח for the city. 1st cites are:
וַיִּקַּח תֶּרַח אֶת־אַבְרָם בְּנוֹ וְאֶת־לוֹט בֶּן־הָרָן בֶּן־בְּנוֹ וְאֶת שָׂרַי כַּלָּתוֹ אֵשֶׁת אַבְרָם בְּנוֹ וַיֵּצְאוּ אִתָּם מֵאוּר כַּשְׂדִּים לָלֶכֶת אַרְצָה כְּנַעַן וַיָּבֹאוּ עַד־חָרָן וַיֵּשְׁבוּ שָׁם: וַיִּהְיוּ יְמֵי־תֶרַח חָמֵשׁ שָׁנִים וּמָאתַיִם שָׁנָה וַיָּמָת תֶּרַח בְּחָרָן׃
"And Terah took Abram his son, and Lot the son of Haran his son's son, and Sarai his daughter in law, his son Abram's wife; and they went forth with them from Ur of the Chaldees, to go into the land of Canaan; and they came unto Ha[r]ran, and dwelt there. And the days of Terah were two hundred and five years: and Terah died in Ha[r]ran."

B. The city of Urfa, ~50km N of Harran, has a trad. that it is 'Ur of the Chaldees'. It was already an old city Abraham's time, with natural springs & a perennial river, on main rd to Harran, at a strategic silk rd passage going N thru Taurus Mts. AKA: Adme, Urhay & from Gk times: Edessa. A. HARRAK,1992. The Palestinian Targum [Codex Neofiti 1, discov. in Vatican Libr. in 1949] which M.KASHER, 1974 dates – with the other Aramaic Targumim- to Ezra's Time, [Accdng to B. GROSSFELD,2000,p.xxiii has '& the beginning of his kingdom was Bable, Edessa & Nisibin & Ctesiphon in the land of Babel.'for:וַתְּהִי רֵאשִׁית מַמְלַכְתּוֹ בָּבֶל וְאֶרֶךְ וְאַכַּד וְכַלְנֵה בְּאֶרֶץ שִׁנְעָר Br.10:10 P.521, C. "The plain was a place for dry farming of grain and for sheep and goat herding on grain stubble and in the surrounding hill…in… early third millennium B.C.E… the surrounding hills were forested and the area received more rainfall than today. Perhaps even hosting a seasonally swampy area with wetland vegetation in the floodplain…A climate shift …changed the conditions such that by (early second millennium B.C.E.) the wetlands had dried… "A. CREEKMORE, 2018 D. consider Kazane Höyük which is just a few km from Edessa– very ancient. A.CREEKMORE, 2008

[1017] Midrash Rabbah 41 as quoted in : Albert D. FRIEDBERG, 2017

[1018] Mitanni in Assyrian or Naharin in Egyptian texts, was a Hurrian-speaking state in northern Syria and southeast Anatolia.

[1019] Nadav NAAMAN,1986, Quoted by Friedberg, supra.

[1020] But see also & compare: A.RAINEY, 2008. He argues that the term *Ḫabiru*/*Apiru* 'is never mentioned as pastoralists (as are the Hebrews). And they are never referred to as belonging to tribes.' & thus didn't apply to early Israelites or similar people. He says the expression *'...shasu'* for 'pastoralists (nomads) who lived in symbiosis with sedentary populations but were prone to violence in times of distress' was more likely & that 'The term first appears in the 15th century B.C.E. in Egypt' However, when Abraham & Jospeh were called Ivri, they were not part of a known tribe & by Biblical Chronolgy, lived before the 15th cent. BCE.

[1021] See: MICHAEL B. ROWTON, 1976, origin and meaning of these words-- on tribal, urban and those semi-detribalized individuals and groups that may function as independent urban labors, mercenaries or parts of roving bandits. P.14 "a social element intermediate between established tribal society and established urban society, not belonging fully to either one or the other. It is important to note that this intermediate element commonly took the form of tribal splinter groups "

[1022] Br. 41:12 On the Biblical Josef, see, in this sefer: DOING A MITZVAH WITH SHLEMES – IN A COMPLETE WAY & YOSEPH IN MITZRAIM – 13 YEARS A SLAVE

[1023] Give source on muzzling camels – in Midrash etc. BR.24:32 https://www.sefaria.org/Bereishit_Rabbah.60.8

[1024] Br. 46:34 "…for every shepherd is an abomination to the Egyptians."
"... כִּי־תוֹעֲבַת מִצְרַיִם כָּל־רֹעֵה צֹאן׃"
On what we learn from the shepherds , See in this sefer [Lev 19:18]
"...LOVE THY NEIGHBOR AS THYSELF...
" ... וְאָהַבְתָּ לְרֵעֲךָ כָּמוֹךָ ...

[1025] Gunnar LEHMANN: 2021

[1026] It may be that the name of the 7th letter, Zayen, shifted from something that was more obviously related to a scale to the name that we have today.[929]

[1027] [Talm. Bavli-Sanhedrin 21b- bottom]

[1028] "The name "Hebrew Language" itself does not occur in the Bible; instead, it is called the "language of Canaan" (Isa. 19:18) and "Judean" (II Kings 18:26, 28; Isa. 36:11, 13; Neh. 13:24, in the last passage already in accordance with the late, post-exilic usage, which extended the term "Judean" to the nation). Not until about 130 b.c.e. (in the prologue to Ben Sira) does εβραϊστι – occur to denote old Hebrew. Josephus and the New Testament, however, use this term both of Hebrew and Aramaic (in contradistinction to Greek)." https://www.encyclopedia.com/literature-and-arts/language-linguistics-and-literary-terms/language-and-linguistics/hebrew-language#The_Names

PART 7: Who, specifically, created these letters?[1029]

> It is an axiom of historical criticism that the same arbitrary change in a conventional system, when many – even innumerable – such changes are possible, will not occur twice, and certainly not at the same time in nearby places. Yet in all varieties of the Greek alphabet the West Semitic consonantal signs *ʾalf* א, *hē* ה, *yod* י, *ʿain* ע have been converted to the Greek vowel signs *alpha* α, *epsilon* ε, *iota* ι, and *omicron* ο, while Semitic *wau* ו appears in the Greek system as two letters: consonantal *wau* ϝ (much later called *digamma* from the shape[13]), which keeps the same sixth place in the abcedarium as original Semitic *wau*, and vocalic *upsilon* υ, placed at the end of the Greek series after *tau* (Tables I, II).[14] Therefore the full system of vowel indication in Greek writing, of original and even idiosyncratic design, unknown in any earlier writing, by itself places beyond doubt the conclusion that the alphabet was created by a single man

The sages of the Talmud also knew of another use of the word Ivri-עִבְרִי. It was a reference to the students and decendents of a sage born six generations before Abraham, Ever-עֵבֶר - a great-grandson of Shem- שֵׁם.[1030] Shem and Ever were understood by the Talmudic Sages to have maintaned a school for teaching the ways of God.[1031] The Sages don't call these letters Ksav Avroham, Ksav Shem, Ksav Noach or Ksav Adam. It may be that the Ksav-Ivri the Sages refer to was understood to have come from the school of Ever-עֵבֶר-and his students. Those teachers would have understood, that to counter the promoters of dehumanizing idol worship, they should develop a "censorship resistant" system [1032] that could carry their ideas of Godly Righteousness –more quickly and surely beyond their immediate environs.

In such a context, how long would it have taken them to develop a low-cost communications technology that any thoughtful person – old and young – could use to preserve or help learn a better way of life? They would see that in the languages most widely spoken by their forebears, descendants and contemporaries in their area - Semitic languages- the vowels of a given word could generally be understood from the context.[1033] The number of different sounds of the consonants was about 30. At least a fifth of these consonants[895] were actually two forms of the same type of sound: a fricative and a plosive. Since the plosive would generally come at the beginning of a word, or at a particular place in a word based on well understood gramatical rules, it wouldn't be necessary to have a separate letter shape for each sound. With two other letters[1034] that also had at least a dual character, the result was a system with only 22 distinct letter shapes.[1035]

These letters would have to be designed so that each would convey its distinctive sounds from its appearance and name. The name of each letter would be evident from what it looked like. The sound of the letter would come from the initial sound of the name – the acrophonic principle. To help learn the system quickly and easily, the letters would be arranged in relation to each other – in a carefully constructed mnemonic order. The combination of each letter's shape, numerical position, neighbors and 'story'—would make it easy for both adults and children to learn to read.

In this scenario, the Aleph-Bes would not have come from any guild of scribes – who have an interest in protecting the exclusivity of their trade and the security of their jobs. It would have come from people who wanted to promote the ways of righteousness in an environment becoming dehumanized by advances in agricultural tech-nology[1036] weaponry[1037] and the ways of the moon-god priests. How long would it have taken the students of Ever-עֵבֶר to develop Ksav Ivri-כתב עִבְרִי? Not centuries, decades or years. Probably a few months or less![1038]

[1029] The quote shown here is from , p 10 ", B. B. POWELL, 1991 [The only mention of writing in Homer is : "In a version of the Potiphar's wife story attached to the name of Bellerophon, Proteus sends him away to Lycia to be done away with by one of his guest-friends. Toward this end he gives the unwitting Bellerophon a closed diptych tablet on which are inscribed "baleful signs…soul-destroying, many of them" (sema ta lugra…thumophthora palla" [Il .6. 1 68-170, 1 76- 1 78]) ." From: p 132,"THE TEXT: Signs of Writing in Homer" in ch. 4 Andrew FORD, 1992

[1030] Gen.10.1, 21-25,11:1-32

[1031] Avroham: Bereishit Rabba (56,10 - "Shem called it Shalem, as is written, [Br:14:18] 'And Malkizedek the king of Shalem…'"), Rivka, Yaakov: Br:22:18-19 Yitschak studied for 3 years; Rivka Br. 25:22; Yaakov Br. 25:27;" dwelling in tents [Gen. Rabbah 63:10]"Br.28:10-22; Joseph: Jacob taught Joseph what he learned in the Academy of Shem Ever [for more on this *see* Gen. Rabbah 84:8.

[1032] See in this Sefer: **THE MIGDOL BAVEL OR 'TOWER OF BABYLON' The 70 Languages & A POSSIBLE "HIDDEN MITZVAH" TO CREATE A "CENSORSHIP RESISTANT" INFORMATION ENVIRONMENT.**

[1033] This may not've been equally true for all Semitic languages at that time – but it was apparently true for those used by the creators of the new writing system.

[1034] Vov ו & Shin ש. The story of Shin – Sin is more complex than I've written.

[1035] There are no final forms – distinct forms for the end of a word – in Ksav Ivri

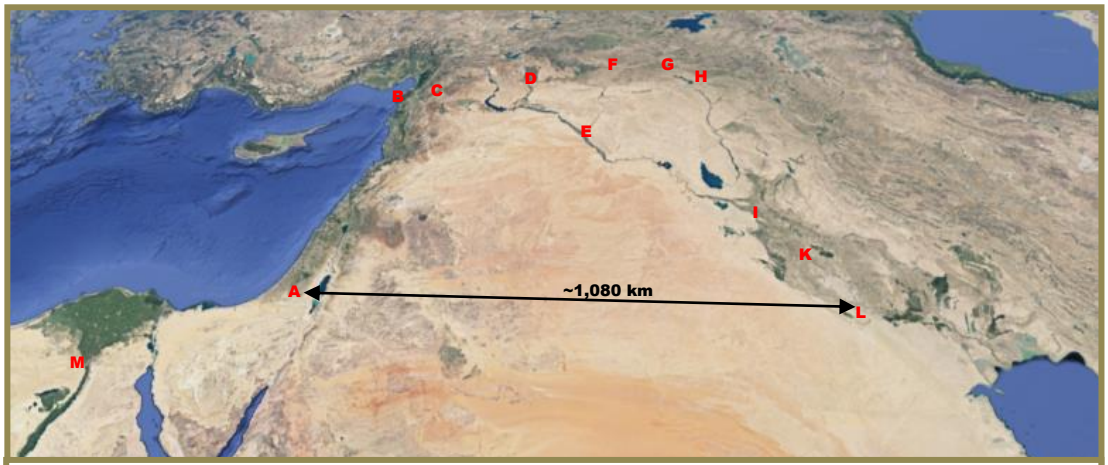
[1036] The systems of irrigation that increased agricultural productivity in the fertile river valleys of Mesopotamia – and Egypt – also increased the power of those who controlled the irrigation & the redistribution of the crops produced. This required record keeping & record keepers – bureaucrats –& unimpeachable, large scale leaders. This apparently led the rulers & their associates to the create systems of "gods" who would become the emotional centers of the life of the people. The transhumantic shepherds had very different social organizations based more on family and cooperative, non-bureaucratically organized, effort.

As shepherds, they practiced respect for the resources that they had in common – the grass and water – which led to a less tangible but at least equally important respect for people themselves. This is the source of the globally central idea of "**LOVE THY NEIGHBOR AS THYSELF**."[Lev. 19:18] [See page 90 in this sefer.] They were also carriers of moral and historical traditions from before the Great Flood [See, in this sefer, p 148-193 **FROM THE MOUNTAINS OF ARARAT TO THE TOP OF PISGAH - A CLOSER LOOK AT THE MABUL—THE FLOOD OF NOAH**] – including respect for family life and the repudiation of idolatry. [See in this sefer the **"7 MITZVAHS OR 7 COMMANDMENTS OF THE CHILDREN OF NOAH"**[150]]

These traditions – & their regular travel to the different cities of Mesopotamia - gave them a clearer sense of reality. They were able to see the self-promoting falsehood of idolatrous cultures and the wars these different cultures engendered. They were able to see the importance of their ideas of a good life and the need to promote them more effectively among their own children and ultimately among their agriculturalist neighbors as well.

[1037] Advances in weaponry included laminated bows that could shoot much further and penetrate leather armor as well as harder copper-tin alloy swords—in the hands of well organized standing armies of trained, well equipped, soldiers.

[1038] We should remember that the "inventors" were not starting from no writing at all. The Akkadian syllabo-logographic system had already been in use for centuries. It is reasonable to compare this situation with what happened in Korea 6 centuries ago: A completely new alphabet – based on phonetic principals—was developed to replace the thousands of Chinese characters that were previously used to write Korean. The new system was resisted by the educated elite – while the king – who developed the new alphabet – wanted to use it to teach the people principles of good life – based largely on Confucian ideas. "Hangeul was founded in 1443 A.D. (25th year of King Sejong) by King SEJONG THE GREAT (4th king of Joseon Dynasty) and the scholars of Jiphyeonjeon. The title of the book that explains the principles of Hangeul, Hunmin Jeongeum, which literally means "correct sounds for the instruction of the people," was also Hangeul's original name." https://www.antiquealive.com/Blogs/Hangeul_Korean_Alphabet.html



LOCATION OF KEY LOCALES MENTIONED IN TEXT
A. BEER SHEVA; B. UGARIT; C. EBLA; D. HARRAN; E. MARI; F. NISIBIS; G. Mts of ARARAT; H. NINEVEH; I. BABYLON; K. NIPPUR; L. UR; M. GIZA
MAP FROM GOOGLE EARTH , CROPPED BY ASA https://earth.google.com/web/search/Harran,+%c5%9eanlı%c4%b1urfa,+Turkey/@35.42278569,42.20099035,-114.32911948a,2948170.17997384d,35y,-0.00000078h,49.21986196t,0r/data=CigiJgokCSpyc5gs_UJAEQ4BKKNBOTxAGboMOSscBEtAIf8A0V_zNj9A

ic names. This was The Early Semitic Calendar.[1042] This calendar survived the collapse of the PreSargonic states, and continued to be used in the Sargonic period (in Babylonia c.2300–2150 BCE, MC[1043]).

Another calendar was also in use at the same time – the calendar of Nippur. This city was the center of Sumerian idolatry. [1044-A] In the words of one of the world's leading experts on this place:

"From earliest recorded times, Nippur was a sacred city, not a political capital. It was this holy character which allowed Nippur to survive numerous wars and the fall of dynasties that brought destruction to other cities. Although not a capital, the city had an important role to play in politics. Kings, on ascending the throne in cities such as Kish, Ur, and Isin, sought recognition at Ekur, the temple of Enlil, the chief god of the Mesopotamian pantheon. In exchange for such legitimization the kings lavished gifts of land, precious metals and stones, and other commodities on the temples and on the city as a whole. At the end of successful wars, rulers would present booty, including captives, to Enlil and the other gods at Nippur."[1044-B]

PART 8: When was Ksav-Ivri created?[1039]

Within the Aleph-Bes we already have two strong hints – the years when the constellation that looks like the Ksav Ivri Aleph rose with the sun at the spring equinox and the time frame when the use of domesticated Bactrian camels became established in Northwestern Mesopotamia. Both of these times – and the life of Ever and his School -- give a range of hundreds of years—centered on a time about 4 millennia ago. Can we narrow it down further? If creating the Aeph-Bes was in response to a marked increase in the promotion of idolatry, the date-range of this promotion could give us a more likely time for the creation of the Aleph Bes as well.

There are at least two possible indicators of a specific cultural push to increased idolatry: The change to theophoric -idolatry related- month names and the deification of the king. The earliest monthly records give only the number of the month and no other name.[1040] This may have been the situation in the time of the Great Flood - The Mabul --and may account for the unusual record of the Flood - where months are given only by number and not by name. The use of numbered months – without names -- continued in the area for centuries.[1041]

From the late 24th century BCE a new calendar came to be widely used in the area. It had month names based on the special characteristics of the month – mostly in relation to agriculture—and didn't include any theophoric names. This was The Early Semitic Calendar.[1042] This calendar survived the collapse of the PreSargonic states, and continued to be used in the Sargonic period (in Babylonia c.2300–2150 BCE, MC[1043]).

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The first month in this calendar - at the start of spring, was apparently dedicated to the enthronement of these idols.[1045] An adaptation of this Nippur calendar was imposed throughout much of Mesopotamia at the close of the 3rd millennium BCE.[1046] This was the time of the rule most of Mesopotamia by Isbi-Erra of Isin[1047] who deified himself.[1048] "All of the Isin kings who succeeded Isbi-Erra were deified, it would appear, immediately upon accession." [1049] This self-deification was not just nominal as some suggest.[1050] The 4th in the succession from father to son, Isme-Degan, "named specific locations in temples as well as throughout the land up to its very borders for the performance of his hymns, indicating a deliberate effort to amplify awareness of his divinity." [1051]

The same king who developed this system unintentionally obstructed its development by forbidding the commercial sale of books printed with movable type – which had been developed in Korea in the prior decades. Pow-key SOHN, 1959

[1039] We might also ask: 'How was Hebrew's distinctive grammar created?' It would not be surprising if the regularization of the distinctive grammar & subsequent invention of the Alpeh Bes occurred within the lifetime of one person.

[1040] "The first month dates appear in two documents from Fara (c. 26th century BCE), in both instances indicated by a number…No month name is known from the Fara documents.[Tel Fara – Sumerian city:Shuruppak in S. Mesopotamia, destroyed by fire ~2300BCE, baking cunieform tablets. P.6: W.SALLABERGER, 2021

[1041] In Umma, for example, another large city in southern Mesopotamia, not far from Shuruppak, it continued to the 22 century BCE. Month numbering 1-12/13 was also parcticed in the neighboring city of Girsu. Ibid, p7

[1042] At Ebla & Mari, ibid, p17-18.All month names, cities where found & time frames – pre-sargonic & Sargonic -are given in Table 6 of W.SALLABERGER, 2021, supra, p. 22

[1043] Ibid . p 21 MC. This stands for "Middle Chronology", There is some uncertainty about the chronology +/-60 years in this general time frame. See: 1. T.DE JONG & V.FOERTMEYER, 2010 2. C.PEARSON, et al, 2022 3. V.SAHOGLUA, et al, 2022

[1044] McGuire GIBSON,1993

[1045] M. E.COHEN, CDL Press, 2015, p 117-118 [NLI cat # CE33.C644 2015

[1046] Ibid, p379.The author writes that this was "…quite likely by Isbi Erra of Isin…"

[1047] [2017 — 1986 BCE on the middle chronology] Also called Ishbi Erra.

[1048] He, proclaimed himself "Dingir-kalam-ma-na, god of his nation." Douglas R. FRAYNE, 1990 The original language is "Old Babylonian".

[1049] Audrey PITTS , 2015.

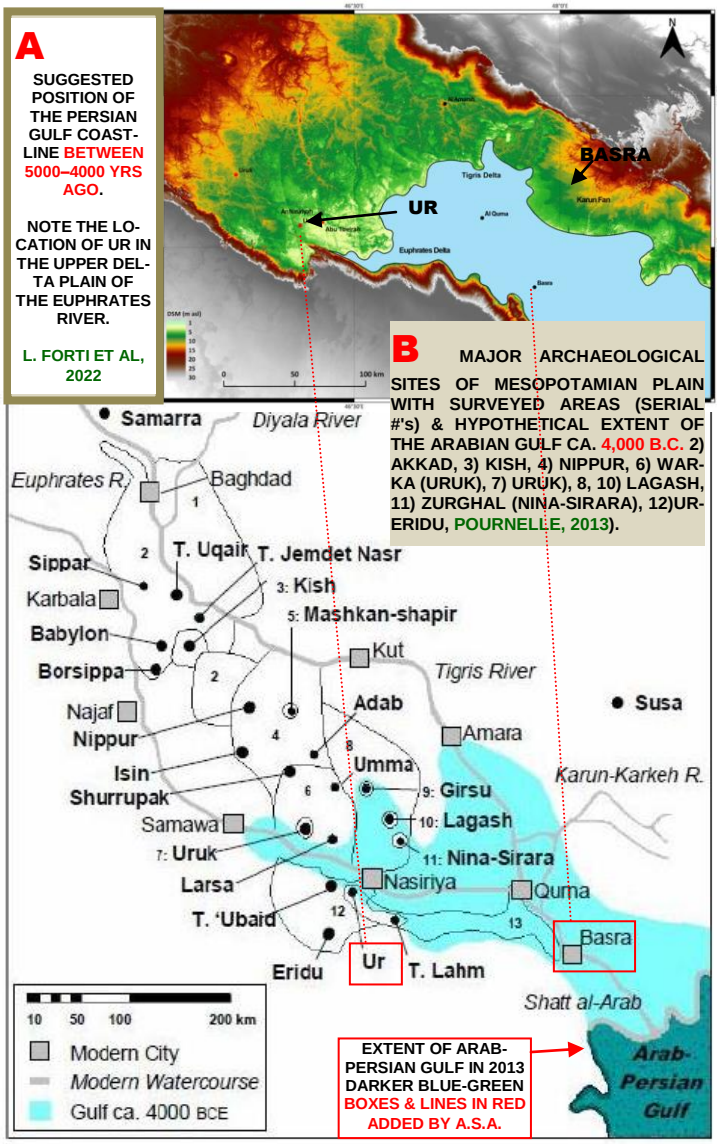
[1050] "…the royal application of the divine determinative was traditional, like most of the titles they bore in texts, but was not meant to signify the kind of heavenly status of their Ur III predecessors . These kings were sacred but not truly devine" Piotr MICHALSKY,2008 p. 40

[1051] Audrey PITTS, 2015, p 89,

[1052] – but the combination of the active promotion of the idolatrous calendar and the self-deification of each what became five generations from father to son – over a century of great kings- may have heralded a rising tide of idolatry and the need for a new and more effective response. That century – by the middle chronology[1043] - was 2025-1924 BCE.

However, in that time frame, the ancestors of Abraham weren't living near Ur and Isin, but about a thousand km NW -- in the area of Harran.[980, 1053, 1054] The Biblical Ur of the Chaldees was not the great city of Ur in the far SE of Mesopotamia, but a city- perhaps with a similar sounding name[1055]- near Harran. Harran is on the route from the Mediterranean coast near Antioch -or the ancient Ugarit - to Aleppo and on to Nisibis, Cizre and Nineveh.

Harran was also an outpost of the culture of the great and ancient Ur- ~1,000km to the SE.[1056] When the temple



of the 'moon god' "Sin"or "Suen" in Ur was attacked and destroyed at the time of the fall of that city,[1057] a large contingent of its priests fled to Harran and reinforced or established a major center for their specific idolatry in their new home.[1058] Centuries later – in the time of King

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[1052] The first to practice self deification was Narem-Suen, [Naram Sin] the 4th king of the Sargonic dynasty who ruled 2254–2218 BCE middle chronology. He only claimed to be the God of his home city Akkad. Narem Suen's son, Shar-Kali-Sharri, [reigned 2217–2193 BCE middle chronology] was self deified upon accession to the throne. Over a century later, Sulgi, the 2nd king of the successor dynasty deified himself in the 21st year of his 48 year reign (2094–2047BCE). Wikipedia, citing : Piotr STEINKELLER https://doi.org/10.1515/9781501504778-004

[1053] S. LLOYD & W. BRICE,1951 "The ancient city of Harran was a stage on the trade route between the Mediterranean and the plains of the Middle Tigris. This road may be traced from Iskanderun or Souedia, by Antioch, and across the short desert crossing through Aleppo, to the elbow of the Euphrates about Birejik or Carchemish (Fig. I). It is here that the river, having just left its mountain gorges, but not yet spread widely over the plains, is most easily bridged or forded" p 80, pdf p 5 of 40

[1054] Tamara M. GREEN, 1992,1996

[1055] As "New Amsterdam" was related to Amsterdam.

[1056] Ur, in its early period bordered the Persian Gulf [A.1 L.FORTI, S.MILLI, 2022] [SEE MAP 'A' ABOVE RIGHT]; A.2 POURNELLE, 2013 [SEE MAP 'B' AT RIGHT] B. [V.SISSAKIAN, et al, 2020, L. VERDERAME, 2019] & was directly affected by its twice-daily tides of ~± 1 meter. Also, there was probably a tidal bore of comparable or greater magnitude that ran up-river twice a day. [see:C.1 p 4,8,17 Susan BARTSCH-WINKLER, 1988 & David K. Lynch; C.2 the tidal bore in the Shat al Arab [sic] is one of 6 rivers in the world cited with an "impressive" tidal bore, [before major dams & drainage projects radically changed the river's hydrodynamics]p120,Frank WOOD, 1946, C.3 A.ADIB, et al,2014; D.1 W.ZERBE, 1972]Tidal bores can be particularly strong where the area nearer the shore becomes more shallow and/or the estuary narrows in the inland direction. Judging from the two maps at right both conditions would have applied at and around Ur for a substantial period between 4000 & 6000BP. The Shatt al-Arab [Which carries the combined water of the Tigris, Euphrates and Karun Rivers] in recent times[2014] had a normal tidal range of 3m, 11km upstream of its mouth. Even ~100km upstream the range was .75m [see D.2 p 84 & 85, A.A.LAFTA, 2021] D.3 For plain English review of Tides- what causes them & how they vary by location, day, month & yr, see Steacy Dopp HICKS, 2006

E.1 "At the time the settlement [of Ur in SE Mesopotamia] was founded, in the Ubaid period from the late sixth to late fifth millenn[i]a bc, the level of the Persian Gulf was rising, and by the Uruk period a 1,000 years or so later, the water was 2.5 metres above today's level with the coastline reaching as far as Ur itself, creating new marshes and a new delta. POURNELLE,2013, an expert in the interpretation of satellite photographs, describes these early settlements like Ur as 'islands embedded in a marshy plain, situated on the borders and in the heart of vast deltaic marshlands … their waterways served less as irrigation canals than as transport routes.' Loftus, writing in 1857, states that even then, 'During inundation [Ur] was completely surrounded by water', and Mallowan in the 1920s observed the same phenomenon.[p.5[pdf 13 of 160] H.CRAWFORD, 2015] E.2 Being surrounded by such extensive todal marshes gave the people of Ur with detailed knowldge of the tides – a stong defense against invaders who did not have such knowledge. E.3 Detailed knowledge of --and ability to predict-- the tides of the Normandy beaches was a key factor in the success of the Allied Nomandy beach invasion of WWII. "tide range around the Normandy beaches was *around 20 feet* " NOAA OCEAN PODCAST: EPISODE 36 F. It was seen in those times that the position of the moon in relation to the sun (particularly, that both new moon & full moon correspond with the highest tides & tidal bores) made the moon appear much more important than it would be to those who didn't see such tides & tidal bores– either, 1. they were far from the sea , 2. moon was obscured by clouds 3. tidal pattern was obscured by winds & storms, &/or 4. no noticable tidal bore. G. This was probably combined with the observation of at least one total solar eclipse – where the moon completely blocks the sun -- & dozens of partial solar eclipses - over the course of several centuries. NASA "SOLAR ECLIPSES..." The combination of these phenomena could lead to the idea that the moon is among the strongest forces. Unlike storms, its effects were subject to mathematical prediction. Those who could predict the tides & eclipses would gain substantial influence in such a society. To impress the public initially, it woud not be necessary to predict a solar or lunar eclipse more than a few days in advance. This suggests that the priests of the moon god cult were very good scientist/mathematicians. H. Since the time between high & low tidal amplitudes – from Full or New moon to Half moon – was ~7 days, this increased the importance of a 7 day period. The Torah-based 7 day week is not linked to the months while the Torah-based new moon is based on observation of the moon. The Sabbath is based on counting full days. I. It should be possible to see "pinhole camera" images of half & quarter & full moons –in the shadows of leafy trees—where there are no sources of light other than the moon and stars. This would give people the idea of looking for- & understanding partial eclipses of the sun during the day --as pinhole camera images. It's very difficult to notice a partial eclipse of the sun by looking directly at it, as people avoid looking directly at the sun. R.MOSTERT,1989 I. T.DE JONG,1989 J. "Thabit ibn Qurra was a native of Harran and a member of the Sabian sect. The Sabian religious sect were star worshippers from Harran…" THABIT. Thabit …came to Baghdad, where he founded a school, staffed by fellow Harranians." T.GREEN 1992p112-13 K. T.ORNAN, 2001

[1057] [Pdf 90: destruction of Ur & its moon-god temple] H.CRAWFORD, 2015

[1058] 'The name of the northern Mesopotamian city of Harran first appears in over 98 late 3rd-millennium administrative texts from Ebla.' p 391, S.W.HOLLOWAY, 2002, has many primary sources on Harran late 3rd & early 2nd millen BCE, p 391 & 392.

Hammurabi of Babylon, Harran's 'moon god' temple was the site of a treaty between that great king and another potentate in the area.[1059] This intensification of idol worship in the homeland of Abraham and his ancestors may have been the ultimate impetus for the development of the Aleph-Bes. The cult of the 'moon god' was so strong in Harran, it continued there as an influential force for the next 3 millennia – disappearing in the area with the physical destruction of the city and deportation of the population by the Mongols after 1271 CE.[1060,1061, 624]

The latest point in time for the creation of the Aleph-Bes in this scenario would be when Avroham left Harran for Canaan. This assumes that Avroham carried the Aleph-Bes with him when he left. Part of the reason he's called Avram Ha Ivri-אַבְרָם הָעִבְרִי [Br. 14:13] - even though at that point, he'd come most recently from Egypt, may've been that he knew the Aleph-Bes – a sign of the students of Ever- עֵבֶר. Over 50 years later, he sent Eliezer- אֱלִיעֶזֶר to find a wife for Yitzchak, carrying "...all the good of his master in his hand...וְכָל־טוּב אֲדֹנָיו בְּיָדוֹ ..."[Br 24:10]. Rashi explains this was a written deed of gift - following the words of R. Chelbo[1062] רַבִּי חֶלְבּוֹ אָמַר זוֹ דְּיָאתִיקִי. Midrash Rabbah 59:11. It also means that Avroham expected the people at the other end – near Harran – to be able to read it. This is the *terminus ante quem* [latest possible date] based on Biblical Chronology and respected Midrashim.

Do we know when Avroham left Harran – according to the Biblical Chronology? The Biblical Chronology is what is relied on to produce the current calendar year. In 2022CE, it's 5782 years from Creation in the standard Orthodox Jewish Calendar. It appears a simple task to just add up the years given explicitly in the Torah to give us the time Avroham left Harran. The usual sum given in several traditional sources is 1948 years from Creation to the birth of Abraham and the Torah says explicitly [Br. 12:4] that he was 75 years old when he left Harran. So, based on this, he left in 2023; 5782-2023=3759; 3759-2022≈1737 BCE would be our *terminus ante quem*.

However, this Biblical Chronology is based in large measure on Midrash Seder Olam – by R. Yose ben Halafta. As we've seen elsewhere in this sefer, though Seder Olam is an important and usually reliable work, it does not have- in all its parts -- the agreement of the Sages. In some particulars on the timing and sequence of important events –the sages and subsequent commentators either ignore it or reject it outright. [581] [See also in this sefer: "THE DIMENSIONS OF THE MIZBEACH HA NECHOSHES..." and footnotes 599 & 614-D]

We have also seen how a lack of clarity on single letter in a common expression that was once well understood, converted "blue" into "yellow with black spots".[1063] This is all to introduce the reader to the reality of an apparent major discrepancy between the chronology based on Seder Olam and the chronologies of those who were one or more centuries closer to the periods in question. According to these more proximal chronologies,[1064] we should add 168 years[1065] to our original figure leaving the *terminus ante quem* at about 19 centuries BCE.

PART 9: A Gap of Six Centuries?

If Ksav Ivri was created by 19 centuries BCE, then there is a gap of about six centuries before we find the first examples of the Aleph Bes in close to the order that we have today. Thousands of clay tablets in a cueniform version of the Aleph Bes have been unearthed in and near the city of Ugarit- together with about a dozen tablets showing the order of the letters. Is it possible that the Aleph Bes could have existed and been used for so long without any apparent evidence in the cuneiform or other epigraphic records?

In the scenario presented here, the new writing system was not intended to support correspondence with kings and other officials, record keeping, general literary efforts or casual writing. It was conceived and used as a holy activity – to serve God and resist idolatry. It was for genealogies and for stories such as those found in the first chapters of Bireishis.

The new system made writing, reading and transportation of documents extremely easy compared with the then prevalent syllabic-logographic system – usually written in cuneiform on clay. It was also far more permanent than cuneiform writing on wax boards. Still, the specially treated leather that it was written on was relatively expensive. This further limited its use so that it was rarely employed for the kind of day to day records that it was not – in any event—intended for.

[1059] "The importance attached to the oath taken by the gods of the other contracting party is illustrated by the passage in the letter of Abum-ekin referring to the ratification by Zimri-Lim of his treaty with Hammurabi: " The servants of Hammurabi will take up the word with my lord to this effect,,' Our lord has touched his throat; to the gods of our lord (who) dwell there do you touch your throat "'. Since no treaty text of the eighteenth century B.C. has been found it is impossible to say how may deities were invoked as witnesses." There are, however, two references to the chief deity before whom the oath was sworn. Asdi-takim, king of Harran and the kings of Zalmaqum, on the one hand, and the Bin-Yamin, on the other hand, swore before Sin of Harran[citing 'Melanges Syriens, II 1939'[V. 2, p. 986 in "Benjamintes Dans Les Textes De Mari", Georges DOSSIN,p981-95], while the kings summoned by Zimri-Lim to form his coalition were to participate in the 'sacrifice of Istar'.p89,J.M.MUNN-RANKIN, 1956.

[1060] T.GREEN,1992,p100,citing:Ibn Shaddad,in D.S. Rice,'Medieval Harran', *Anatolian Studies* II,1952,45;cf.D.S.Rice,'A Muslim Shrine at Harran'BSOAS, XVII/3,1955,477.This is~90yrs after Binyomin b. Yona of Tudela visited the city. He wrote:"…Harran, where twenty Jews live. Here is another synagogue erected by Ezra, and in this place stood the house of Terah and Abraham his son. The ground is not covered by any building, and the Mohammedans honour the site and come thither to pray."p33/51,B.TUDELA,[12th cnt.CE[Trans. Illus. & comnt. M.N.Adler, 1907]

[1061] RAMBAM, in "The Guide for the Perplexed"-- relying in part on "Nabbatean Agriculture", traces astrology and associated magic through the "Sabeans" its promoters ['Sabean' occurs 42× in the Guide][elsewhere, also spelled Sabian] The Sabians came primarily from Harran] as a primary source of the idolatry mentioned in the Torah.[He writes[PART III, Ch. XXIX, pdf p 457] "It is well known that the Patriarch Abraham was brought up in the religion and the opinion of the Sabeans, that there is no divine being except the stars." See also "Maimonides on Magic, Astral Magic, and Experimental Science"p:261–85 D. SCHWARTZ, 2021

[1062] Rabbi Chelbo (רבי חלבו) was an Amora who flourished about the end of the 3rd century,[CE] and who is frequently mentioned in both Talmuds.

[1063] See, in this sefer: WHAT WERE THE 'TACHASH SKINS'- עֹרֹת תְּחָשִׁים

[1064] A. For a current summary issues involved & opinions in the Orthodox Jewish world on this, - incl. refs to views of Gaonim, Rishonim, Achronim and G'dolim of more recent times, see Rav Tzvi SINENSKY, 09.11.2016
B. For an unusual but substantive attempt to explain & reconcile the apparent discrepancies , see Henry ENGLANDER, 1919

[1065] This # comes from two versions of a study by R. Shimon SHWAB 1962, 1991. For a biography of R. Shimon Shwab, Z"TsL see: R. Moshe SCHWAB

It was also apparently the custom from the earliest times not to inscribe anything to mark a grave.[1066] No writing or other inscription is noted in connection with the first explicit mention of burial in Torah – the burial of Sarah. There is also no mention of any document or reading or writing in connection with the purchase of the very special- and expensive - burial cave in which she and Avraham and members of two subsequent generations of their family would be interred. This suggests that the people Abraham bought it from- the Children Heth - relied on community witness and not written words for important transactions of land. This absence of any mention of inscriptions, reading or writing is particularly noteworthy as the description of the purchase involves the equivalent of over 240 words. [Br.23:1-20]

Though the burial of Rachel included setting up a pillar on her grave – as she died in childbirth by the side of a road some distance from the nearest town—there is no mention or tradition of there being any inscription on or near the pillar. [Br. 35:16-20] Similarly , with all of the altars and pillars and other stone monuments set up by Noach, Avroham,Yitzchak and Yaakov, there is no explicit mention or recorded tradition of any inscription. [1067]

The first mention of a lapidary inscription – other than the stone tablets at Mt. Sinai[1068] and the garments of the High Priest,[1069,1070] is when Joshua wrote the laws on stones connected with the altar of unhewn stones that he built on Mt. Eval. [Josh 8:30-35] The inscription was made in a plaster coating on the stones – and not hewn-in the stones themselves. [Dt.27:1-8][1071,1072]

The overwhelming bulk of Phoenician epigraphic inscriptions are related to their religious activities – burials[1073] and votive offerings.[1074] There were apparently no such activities among the initial carriers of the Ksav-Ivri Aleph Bes that would have left a similar record[1075]. [Check Sotah Mishna 7.7, Bavli 34a-35b-37b]

We can also imagine substantial resistance from established scribes who spent years learning the old cuneiform, syllabic and logographic systems. Their family practice and relatively lucrative and socially important positions would be threatened by a system that could be learned by an intelligent person in a matter of hours.

A very instructive example of this type of resistance that occurred in more recent and well documented times is the Korean educated elite refusing the use of the newly developed Korean Hangeul[1076] alphabet. This was even though the new alphabet was developed by the king, Sejong, and the Chinese writing system used by the educated elite did not fit the Korean language.[1077] The new alphabet with only 24 characters[1078] could be "learned in a few hours as compared to thousands of Chinese ideographs which require years of study."[1079]

The key reason for the development of this alphabet may have been to promote Korean nationalism based primarily on Confucian teachings. This would explain why a new alphabet was invented – when it may have been easier to adopt an existing alphabet – such as those used by Moslems, Uighurs, Mongols or the peoples of India.[1080] These existing alphabets would have opened the door to

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[1066] "The custom of marking a grave by a stone which bore an inscription describing the qualities of the deceased and giving his age and the date of his death was foreign to the ancient Hebrews." J.JACOBS, I.BROYDÉ, 1906

[1067] Noach: altar-Br.8:20; Avroham: altars-Br.12:7,8; 13:4,18; 22:9; Yitzchak: altar-Br:26:25; Yaakov:altars-Br:33:20; 35:1,3,7; Moshe sets up an altar – but the inscription is in a book. Ex:17:14,15,16. Yaakov: pillar: Br 28:18-22; pillar & heap of stones: Br 31:45-53. Lack of stone inscript'ns may be assoc. w. prohib. at Ex:20:23 of using sword to cut altar stones. See also A.J.GWINNETT,1988 – on techniques for carving /inscribing stone in time of Avos and before.

[1068] Ex.24:12, 31:18 "…tables of stone, written…לֻחֹת אֲבֶן כְּתֻבִים בְּאֶצְבַּע אֱלֹהִים…"
Ex.32:15,16,19; 34:1,4,28,29; Dt. 4:13;5:22; 9:9-11;15,17;10:1-5; IKi.8:9

[1069] Ex.28:9-12; … "וְלָקַחְתָּ אֶת־שֹׁתֵי אַבְנֵי־שֹׁהַם וּפִתַּחְתָּ עֲלֵיהֶם שְׁמוֹת בְּנֵי יִשְׂרָאֵל:
'…take two onyx stones, and grave on them the names of the children of Israel.'
Ex.28:21: "…engravings of a signet…פִּתּוּחֵי חוֹתָם אִישׁ עַל־שְׁמוֹ תִּהְיֶיךָ לִשְׁנֵי עָשָׂר שָׁבָט:…"

[1070] Ex.28:36"...engrave on it, like the engraving of a signet… וּפִתַּחְתָּ עָלָיו פִּתּוּחֵי חוֹתָם..."

[1071] On Dt 27:8 -- "And thou shalt write upon the stones all the words of this law very plainly" Among the traditional interpretations of 'very plainly' is 'in 70 languages'. See, in this sefer: THE MIGDOL BAVEL OR 'TOWER OF BABYLON' THE 70 LANGUAGES & A POSSIBLE "HIDDEN MITZVAH" TO CREATE A "CENSORSHIP RESISTANT" INFORMATION ENVIRONMENT. Π GATEWAY TO LANGUAGES...& "FREEDOM OF SPEECH"

[1072] If such writing on plaster was the norm, the inscriptions would not be very durable – compared with carving in rock or using baked clay.

[1073] The oldest continuous text in a version of Ksav Ivri is the inscription carved in the stone sarcophagus of Ahiram in Byblos- 1000BCE. The zayen in that inscription looks like a capital I which wouldn't have preceded the wide & low 'ballance scale' version of the chronologically more recent examples of Ksav Ivri .

[1074] "The Cippi of Melqart …dated to the 2nd century BC…votive offerings to the god Melqart …inscribed in two languages, Ancient Greek and Phoenician, and in the two corresponding scripts, the Greek and the Phoenician alphabet and their decipherment in 1694 made them the first Phoenician writing to be identified and published in modern times. https://en.wikipedia.org/wiki/Cippi_of_Melqart

[1075] There is, however, a reference in the comentary of Arbarbanel on Genesis, to an inscription carved in stone in Ksavv Ivri dating from before the flood. The source of the quote is Josipon – an adaptation and expansion of some works of Josephus and Josephus is quoted as the source of account:

וכתב עוד במכתבו ההוא שבימיו
הציף הקב"ה שלישו של עולם ושכן עשה בימי אנוש בן שת בן אדם הראשון והראו לאלכסנדר את הקבר ההוא ואת לוחו 'אבן אשר שם והיה הכתב כתב עברי .'ושכתב כל זה אליכסנדרי באגרת ששלת לאריסטוטל"י רבו ומלמדו הגדול עד כאן.

"And Yosef ben Gurion (Yosephun) in the second book of his books wrote, Alexander came to the land of Parsikin from the island of the sea. And he found there people similar to women and ate raw fish, and they spoke in the Greek language. And they said to him that in the middle of that island was the grave of an ancient king, and his name was Kenan ben Enosh, who preceded the Flood, he ruled over the entire world. And he was a wise man who understood all of the wisdom, and he understood and ruled over the spirits and demons, and he he knew in his wisdom that the Holy One, blessed be He, was destined to bring a Flood upon the Earth. And he would write the future to be about this on tablets of stone. And he wrote further in his letter that during his days, the Holy One, blessed be He, flooded a third of the world. And so He had done in the days of Enosh son of Seth son of the first man. And they showed to Alexander that grave and the tablets of stone that were there, and the writing was the writing of Hebrew. *And Alexander wrote all of this in the letter that he sent to Aristotle, his teacher and great master. End quote.* And in truth this is great testimony for that new corner and also to the truth of what I explained, that the first language that our first parents spoke, which is the language of Hebrew, and the letter in which they wrote it is a writing of God. "
Hebrew from: https://www.sefaria.org.il/Abarbanel_on_Torah%2C_Genesis.5.3?lang=he From בראשית ה':ג', אברבנאל על תורה English from p. 784 of Translation of Hal Miller.
However, as already noted, Josephus is unreliable when reporting on both what is written in the Torah 977 & what is understood by our sages of the Talmud 590

[1076] KIM Zong-Su, 1990, English Translation by Ross KING 2005

[1077] See: Gary K, LEDYARD - 1966

[1078] The # of characters depends on how & in what century they're counted.

[1079] P171-172, Sung-hwa LEE, 1958

[1080] Though the Korean letters are based on the idea of Devenagari -- representing the parts of the mouth in the positions they have when producing the particular letter's sound – the actual shapes appear to be strongly influenced by Phags-pa which was developed on the orders of Kublai Kahn as a univesal scrpt for his empire- which included China, Tibet, Mongolia and lands of the Uighers and others. It was actually created by his religious teacher and close advisers – a Tibetan Buddhist Monk- 'Phags-pa bLa-ma, and was built on the Tibetan script .

The Tibetan script is related to Devanagari and Brahmic scripts. Brahmic was derived from Brahmi and Brahmi developed from Ksav Ashuris/Ksav Ivri – but with letters formulated to better reflect the position of the parts of the mouth in pronouncing the sound of the letter.

> "To sum up, Korean letters for most of the wholly clear initials are noticeably similar in basic shape to their 'Phags-pa counterparts. Influence by these on the Korean wholly clears can be reasonably inferred. In adapting these letters, Sejong subjected them to geometric simplification."

p63, pdf 33of 58 Gari LEDYARD, 2021

more outside influences – particularly Islam – which the king and his successors actively suppressed. [1081]

"It took over a century for the Correct Sounds [Hangeul] to take social root, mainly among women, Buddhists, and others not greatly empowered in the world, to [its] assure survival."[1082] This very slow development probably resulted from a failure to promote education in the new writing system for the general population. The king did translate classics and composed new works in Hangeul. He also required applicants for civil service positions to pass a Hangeul test – in addition to the tests in Chinese that they had to pass previously.

However, Hangeul was not primarily "self-teaching". Someone – or instructions written in another script--had to explain the sounds of the new letters – and the king's introductory book explaining Hangeul and how to pronounce each letter was written with Chinese characters. Thus – only the elite who knew Chinese – and did not need the new writing system- could learn it without a teacher. For the general public who were almost functionally illiterate in Chinese, the lack of any educational program for them, combined with the distain of Hangeul by the educated elite led to very slow growth.

The new writing system was also subject to two periods of intense and effective political suppression. The first- including book burning- was under a subsequent king of the same dynasty in 1504[1083]- only six decades after the new writing was introduced. Two years later, the office for the promotion of Hangeul -- called the "vulgar script" – was abolished.[1083]

Hangeul was in existance 1.5 centuries before it was used as a basic language of an Imperial Edict for the first time - in the Imjin war- with a very unusual set of circumstances.[1084] In 1894, four and a half centuries after its introduction – the Korean Government, for the first time, required that the names of foreign countries and peoples be written in Hangeul.[1085] After 36 years of occupation by Japan [1910-1945] – during which the Korean language was systematically repressed- and post war US & USSR occupation—favorable to Hangeul, the then 500 year old "new" script was adopted as the official script of the new Republic of Korea and actively promoted by its northern counterpart.[1086,1087,1088] In both parts of the country, with energetic Hangeul based literacy campaigns, illiteracy was reduced. It went from nearly 77-78% in 1945 to 4% in 1958 in the South[1089] and is said to have been "virtually eliminated by 1949"[1090] in the North.

Aramaic. *Ananiah Gives Yehoishema a House*, 402 B.C.E. Papyrus, ink, mud, linen. BROOKLYN MUSEUM, See footnote 1097

The new writing system began substantial expansion among the people in the 1880's with the introduction of Christian scriptures that were entirely in Hangeul letters combined with missionary school programs that taught the ordinary public to read. "Even women and Children were able to learn Hangeul while reading the Bible… At the same time, it proved that even difficult and lofty concepts could be expressed in Hangeul alone… The beginning of the complete renaissance and revival of Hangeul dates from this time." [1091]

> "In most of the missions, the itinerant missionary's record …includes…whether he or she is literate…in the Korean phonetic script or in the Chinese character as well. If illiterate he is urged to learn to read & the formation of classes for instruction in reading and writing is encouraged in all groups of Christians. The results of this policy and of the work through Bible classes is…that the percentage of literacy among Christian adherents, men & women, is estimated at between…[85 & 90%], which is vastly above the most optimistic estimates for the rest of the population."[1092]

In contrast to this, the appearance of "Phoenician" writing in post-Homeric Greece—where, at that time,[1093] there was no established former writing system and scribal culture – led to the relatively rapid spread of writing throughout society. Its prime use was not to record business transactions or inscribe stone monuments or offerings to the 'gods' - but to better disseminate the works of the great Greek poets – like Homer and Hesiod.[1094] As Herodotus points out:

> *"The Ionians have also from ancient times called sheets of papyrus, skins, since they formerly used the skins of sheep and goats due to the lack of papyrus. Even to this day there are many foreigners who write on such skins [διφθέρας]."*[1095]

The works of Homer and Hesiod were in effect expressions of the religion of the Greek people. This new vowelized Greek writing was not primarily for business records –which can be written in terse vowel-less forms understandable by a very limited group. It was also unnecessary for official scribal communication between kings-

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[1081] KIM Zong-Su, 1990, English Translation by Ross KING 2005 , p 44-47
[1082] Pdf 43, page 73, Gary LEDYARD, 2021
[1083] Hangeul Chronology, p135, KIM Zong-Su,1990, Eng. Trans by Ross KING 2005
[1084] P 10., Francisco CADAVID, 2012,
[1085] The Gabo reforms of July 8, 1894, 1083.
[1086] Oct 9, 1948 , 1083
[1087] CHANG Doc-sun, 1961. The king also promoted Confucianism while restricting Buddhism, closing Moslem places of worship and banning their distinctive clothing. He also banned the commercial sale of Confucian writings – and had the effect of curtailing the effectiveness of the invention of movable type in Korea
[1088] See: Donald R. SNODGRASS, Yong B. KIM, Shin B. KIM, Quee Y. KIM , 1980
[1089] "Over 77%" is given for Korea as a whole in 1945[p1, pdf p 6] and 77.8% is given in the same report for Korea at the same time – p 53, pdf 58. - but the data are for S. Korea only. C.D.MEINECKE,1958. Data for S. Korea in 1958 are from p9, M.LEE & C.JEON,2016, In all cases data are for 12+ yrs old, reading Korean Hangeul.
[1090] TAYLOR, Insup and Martin M. TAYLOR. 1995,
[1091] This is attributed to the 1887 – first Hanguel only- no Chinese characters -- translation of John ROSS, a Scottish Presbyterian missionary. KIM Yang-Seon 1967, p 448-9, quoted in KIM Song-Su English by Ross KING , 1990, p 44-47
[1092] Horace Horton UNDERWOOD 1926, p27-28 of 340, data is from 1920 report .
[1093] There is apparently confusion between letters of Cadmus referred to in Herodotus being from the Phoenicians – but arriving ~1400 BCE—so the true Phoenicians were actually, Cretans or Minoans with the word Phoenician being confused -- not where they came from but what they sold or how they looked. These earlier 'Cretan/Cadmean' letters were probably Linear B & were ultimately unsuccessful in establishing enduring literacy in Greece. Rhys CARPENTER, 1935
[1094] This was the primary reason for the rapid vowelization of the relatively voweless letters of Ksav Ivri & Phoenician systems acc'ding to Barry B. POWEL, 1991
[1095] "HERODOTUS, c. 484 – c. 425 BCE

who would have had scribes and emissaries capable of reading or speaking whatever language was the lingua franka of the time.[1096]

We should not expect to find ancient copies of Homer and Hesiod – written on animal skins – in the relatively humid environment of Greece. Nonetheless, we have on reliable authority- with some remarkable physical evidence[1097] -- that the great cultural/religious works of the Greeks were there. We don't need pottery sherds or tomb inscriptions to attest to it.[1098]

The Korean Hangeul writing was used on tombstones – but in the early centuries of its history, only very rarely. The oldest Hangeul inscription in stone that survives today was written nine decades after its invention – and in effect, insults those who can read it![1099] From this distinctive historical tombstone we also learn that the seven kings who died in the interim[1100] – including King Sejong himself, didn't have these letters inscribed in or on their tombs. The same would apply to all of the senior scholars, members of the government and distinguished people in Korean society in that nine decade period. This is all the more remarkable as Korean society at that time had the tools and traditions of making inscriptions in stone. The society of Avroham Avinu had neither.

This is a good measure of the resistance of those proficient in the old – hard to learn-- Chinese writing system – even when the King himself was the chief developer and promoter of the new, easy to learn, writing. How much more so would be the resistance of the entrenched scribes to a new writing system developed and promoted by transhumant shepherds-- outside of the system and openly resistant to the establishment's religion? [1101]

This 'outsider' reality may also account for the absence of the two syllable Semitic word, 'GML' in the inscriptions we have from Mesopotamia in the time of Genesis. Instead, there are only 4 syllable Sumerian based words:

'am.si.ḫar.ra .an'= "*elephant of the caravan*" and
'am.si. kur.ra' ='*elephant of the (foreign, eastern) mountain*'

Even so, these are almost always found in lexical lists -- not in actual texts from literature or everyday life.[1102]

PART 10: Conclusion

This study has involved a lot of conjecture and plain guesswork. If each conjecture or guess stood alone or in parallel with the others, the value of this work would be little more than the ordinary sum of these separate elements. But these elements are not really separate. They're more like finding a sack of mosaic tiles – said to be very old and of great value. We open the sack, spread the pieces out on a large table and turn them all right side up. They're various sizes, some clearly whole – with nice, straight sides - others broken. Even the whole ones are of different sizes. Some are all white, some are all black and some are black and white.

We spot one piece larger than most of the others- near the far edge of the collection- that looks very much like a Hebrew letter. Taking a closer look, it is a Hebrew letter and it is carefully made – not an accidental inkblot – or like the faces that can so often be found in the clouds. We guess – on the basis of this one clear piece, that the rest of the pieces are also made up of parts of Hebrew letters and the spaces within, between and around them.

We begin to try to match up the pieces—on the assumption – the guess – the conjecture- based on the first find – that they are all Hebrew letters in the same style and that they have some message when they are put together in the order of the original mosaic from which they came. We have a thousand pieces to work with – and

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[1096] This is a response to: W. WAAL 2020: "…some of the oldest known inscriptions, namely the Nestor cup of Pithekoussai, the Dipylon inscription from Athens and the Hakesander cup from Methone (see now Janko 2015) present elaborate poetic verses in perfect hexameters. Some have taken these early literary attestations as proof that writing was invented by the Greek for the sole purpose of recording Homer (Powell 1991). Generally speaking, however, poetic and fictitious texts and erotic rock graffiti are unlikely candidates for primary use of writing.7 A more pragmatic explanation may be that writing was already in use for documents of an economic and administrative nature – typically the first kind of records for which writing is used – on perishable materials, before the first surviving inscriptions on more durable materials (see, *e.g.*, Ruijgh 1995, 37)."

[1097] See fig. prev. page. A."A type of sealing known as flat-based nodules has more certainly been regarded as evidence for lost types of texts. These are lumps of clay with one or more seal impressions; in some examples impressions on the base of the nodules show that they had been attached to pieces of very thin leather which had been tightly folded and tied with thin string. This has led to the suggestion that leather or even parchment was in common use for writing." p. 175, JG YOUNGER, P REHAK – 2008]. B.. "It is in fact hard to imagine what other than written documents the folded and sealed pieces of leather could have been." p.112,pdf p134, in H.WHITTAKER, 2013. See also on "Wooden Writing Boards" from 14th cent BCE p. 113 of above. "There is ample textual evidence for the perhaps widespread use of wooden writing-boards in the Near East from the time of Ur III (Symington'91:111; MacGinnis '02). As stressed by Nicholas Postgate, Wang Tao and Toby Wilkinson, the Ulu Burun writing-boards should be regarded as representatives of what may have been a large and important class of Bronze Age objects (POSTGATE et al. 1995: 478; cf. MACGINNIS 2002: 227)."ibid p 212. C.. "When sending a letter an offical would roll or fold up the document and tie it with string. He then placed a wet blob of clay over the knot and pressed his seal into it, thus marking it with his official signature and insuring the security of the contents until the letter reached the intended recipient ." … string marks are sometimes found on the bullae. There are a few extant examples of [such] bullae in use – such as… [a 5th-4th cent BCE] document from Elephantine, Egypt.[photo]R. DEUTCH, 2009

[1098] A.The physical evidence noted above, has been found in ancient city–like contexts. The transhumantic shepherds lived in villages – with very little potential for archeological finds. They also probably didn't seal documents with clay – but with cords, cloth or leather. Maybe some were kept in more elaborate cases of wood & metal—which might be found – perhaps in ruins of a shipwreck – like the hardware of writing boards found in Ulu Burun shipwreck,supra p.476, POSTGATE,et al,1995. But shepherds in earlier, post Mabul times, very rarely traveled by ship. Rivers & streams were probably forded- as at Br 32:23 "…sent them over the brook…:וַיְשַׁלַּח וַיַּעֲבֵר אֶת־הַנָּחַל וַיַּעֲבֵר אֵת אֲשֶׁר־לוֹ" If ferries were taken, they weren't taken in a storm & so, not likely to be sunk. B. See also on Aramaic documents written leather & wood – from 4th Cent. BCE, Bactria & 5th Cent. BCE, Egypt, see respectively, Joseph NAVEH and Shaul SHAKED, 2012; G.R.DRIVER, 1957.

[1099] It has what may be the name of the deceased, Yi Yuntag, in Chinese characters at the top & continues in Hanguel: "Sacred tombstone—he who tocuches will suffer clamity. This is directed at illiterates." [Those who could only read Hanguel were considered illiterate by the educated elite who could afford stone carved tombstones. This tombstone – dated 1536 is "Seoul Tangible Cultural Asset No 27" From p34 with unclear BW photo KIM Zong-Su, 2005.

[1100] Sejong 1418–1450; Munjong1450–1452; Danjong 1452–1455; Sejo 1455–1468; Yejong 1468–1469; Seongjong;1469–1494; Yeonsan-gun 1494–1506: HEILBRUNN TIMELINE OF ART HISTORY as of 7/29/22

[1101] OTHER MAT'L THAT MAY BE INCLUDED: A. p.492 "A small part of the tablets (perhaps those written in the latest period just before the destruction of the archives) may contain only Eblaite syllables without any admixture of Sumerian signs, but this is also still uncertain." H.WELLISCH,1981, [Check legends of the Jews – cites Sotah]

[1102] p 56-60, M.HEIDE, 2021[This is only for the Sumerian; ḫar.ra .an , as already noted, is Akkadian[999]. The explanation for absence of GML is only A.S. Adler.

this may not be all of them. Slowly we begin to match up the pieces. Some can only be of parts of certain letters and not others. Some can only go next to some pieces and not others.

After a lot of work – and a lot of time- we have a good match for almost all of the pieces and we see that there is a nice square pattern to the overall picture. We also see that there are a lot of missing pieces. Even with the missing pieces, we can see from the words that are spelled out, that the letters – the mosaic - was a familiar quote from the Torah – and we can fill in the missing letters – and see the whole picture.

The value of this study is like this mosaic. The guess-es are not in parallel but in series[1103] – and there are confirmatory steps along the way. At this stage, the mosaic is still not finished and it is the author's hope, that some of the readers of this work– with their own distinctive insights and expertise -- will try to finish it.

A.S. Adler, Jerusalem, Cheshvan, 5783

AFTERWORD

This work on the Aleph Bes was started informally on the basis of a simple observation: If the idea of the names of the letters was simply to provide the sound that goes with the letter, then Gog – roof- would be more appropriate for the "G" sound than Gimel – camel. This led me to think that the names of the letters were actually intended to say something significant about the people who first used them. The shape of Daleth – a triangle standing on its base – suggested a tent door – so the people lived not only in houses but also in tents. I went through the Aleph-Bes looking for this kind of relationship for each of the letters. Then I realized that the doors of Bedouin tents were not triangular like Teepee doors– but four sided – and the Daleth is the 4th letter. This led me to think that all of the letters may have an association with their number in the sequential order of the Aleph-Bes. So camel would be the 3rd letter because – with two humps - each comparable in size to the head and neck – the two humped-Bactrian camel was a walking example of three. Beyond the tenth letter –Yod – this didn't work and I looked for relationships between the letters before and after. The combination of these 3 ideas: association with the life of the people who first used them; numerical association and association with neighbors before and after resulted in finding a very strong set of reasons for the letter names and order of the Aleph-Bes- a system designed to be easily learned even while walking. I didn't study the basic literature on this subject until I'd achieved what seemed to be substantial results.[1104] *A.S.A. Nov./ 9 /'22*

[1103] It is a form of Bayesian analysis. ?

[1104] I also didn't look at what is written in the Zohar on the Aleph-Bes before this study was nearly complete. Two otherwise unrelated discussions running simultaneously on a "book blog" – one on the Zohar and one of astrology – led me to think of A. what the Zohar had to say about the Aleph-Bes and B. what the moon-god priests of Harran had to do with astrology.

ADDENDUM A

PHONO-IDEOGRAPHIC WORDS

I

With characters that combine sound and meaning, in a single, simple letter, the Aleph-Bes can be used to make 'phono-ideographic words'.[1105] These are words, each- or most- of whose letters tell us simultaneously what they mean and how to pronounce them. We have already seen some of the possibilities in the names of the letters themselves –& the things these letters name– such as Aleph, Bes, Gimel & Daleth. We've also seen[896] single letter affixes: Bes–*in*; Heh–*women's work*; Vov-

A.The Zohar is a work of over 1 million words-- exclusive of commentary - about the same number of words as the Rambam's Mishneh Torah. This is about 10 times the number of words in the Chumash The beginning of the Zohar is about the Aleph-Bes -- where each letter suggests to G-d why it should be the first letter of the Torah – and G-d explains why each letter – except Bes- ב - is not suitable. With Zayen—said in the Zohar to have been a spear -- the explanation only fits Ksav Ashuris – not Ksav Ivri. [1.2b-1.3a ZOHAR]
Shimon bar Yochai is said to be the author of the Zohar [ORTHODOX UNION, 2014; OHR SOMEACH [no date]; "Jewish tradition adopted De León's approach according to which the Zohar was written by Rabbi Shimon Bar Yochai and a group of his disciples in the Land of Israel in the second century CE."NATIONAL LIBRARY OF ISRAEL [no date]]– and he was a contemporary and colleague of Yose b. Halafta and Eliezer b. Yaakov – both of whom say that the original Aleph-Bes was Ksav Ivri. Shimon bar Yochai was also a contemporary of Bar Kochba – who minted coins in Ksav Ivri. So it is difficult to imagine that Shimon bar Yochai wouldn't know Ksav Ivri. It's also hard to imagine that if he thought the original Aleph-Bes was Ksav Ashuris, his opinion to that effect would have gone un-recorded in the Talmud.
Also, the Ramban –a leading Kabalist in his day –[nifter ~ two decades before the apearance of the Zohar] was – according to his own report in his commentary of chumash – unable to read the Ksav Ivri inscription on a Bar Kochba coin.
B. On astrology coming from Harran, I found:'…Ibn al-Qayyim [al-Jawziyya (1292-1349)] explains the origins of astrology as monotheism reverting back to polytheism. The creators of the art were Sabd'ians, an idolatrous star-worshipping people who, originating in Mesopotamian Harran, believed all good and evil came from the fixed stars and planets." The Hanbali theologian Ibn Qayyim was one of the most prolific defenders of traditional religious propriety in the Arabic-speaking lands of Islamdom. In face of the apparently increasing popularity of the occult sciences which he perceived to be undermining the shar'i traditions of Islam, he devoted a large section of his book, Miftdh DMr al-Sadda, to disproving these pseudo-sciences, particularly alchemy, astrology, and augury. The weightiest part of his attack is directed against astrology, queen of the occult, which he refutes on three levels…' John W. LIVINGSTON, 1992.
It may also be that, having discovered the dramatic effects of the moon on the tides and the the solar solstices & equinoxes -- on the seasons – they may have over-projected their knowledge to an assumed- but non-existent- substantial influence of the planets & fixed stars on the lives of people. The best way to test astrology – available 4,000 years ago- would be to compare non-identical twins born with 15 minutes of each other – the upper limit on time between normal twin births for about 2/3rds of normal twins born. The children would be born under the same supposed astrological influences but would be almost as diferent as brothers and sisters born one or more yeas apart with very different astroglical influences. [Give references on normal twin to twin birth times and studies of astrology and twins].
This would be analogous to the use of "bleed them 'til they faint"-- bloodletting-- in the treatment of acute infectious diseases—which led well intentioned doctors – following the teachings of Hippocrates – to kill over tens of millions people in the course of the 2+ millennia this mistaken idea prevailed. [see, in this sefer THE QUESTION OF BLOODLETTING]
We should also remember that the sexigesimal system –which is still in use today for the measuring time – minutes & seconds – & angles, degrees minutes & seconds – was invented, in part, by the Sumerians – before the founding of Harran-- in connection with astronomy. Similarly, the great Alexandrian scholar Claudius Ptolemy (c. CE 90–c. CE 168) whose "Almagest" was the leading book of astronomy for over a thousand years also wrote *Tetrabiblos*, an authoritative work on astrology – which prevailed for a similar time. "Eduard Jan Dijksterhuis criticizes the *Tetrabiblos*, stating that "it only remain puzzling that the very writer of the *Almagest*, who had taught how to develop astronomy from accurate observations and mathematical constructions, could put together such a system of superficial analogies and unfounded assertions."E. DIJKSTERHUIS, (1969)..p. 88

[1105] A Google search of the expression "phono-ideographic words" produced no 'results' 4/13/'22; "phono-ideographic" alone, produced 71 'results' – mostly related to Chinese – none related to Hebrew.

and; Lamed–*to*; Kaf–similar to; Mem-*from*; Nun– *plurality*; Shin-*that*; Sof-*last* & *past*. With 2 more: Aleph and Yud, that we've not yet discussed in this context, 11 of 22 letters are recognized single letter affixes.[1106]

If we take Aleph – the first letter and follow it with Sof – the last – we get a two letter phono-ideographic word: את. This word – pronounced Eth, Es or Et – is a pointer – pointing to the next word. Like an arrow, it begins at the beginning of the Aleph-Bes and ends at the end. The words for Father: Av – אב, and Mother: Em – אם - suggest, respectively, the person who is first with regard to the house—probably built by the father -- and first with regard to water – and nourishment in general – usually collected and prepared by the mother.

New words based on this phono-ideographic potential might have been invented at the same time the Aleph-Bes was established. Among the first candidates for such new words might have been the words for book and writing. The first word used for book in the Torah is Sefer-ספר.[1107, 1097] It is a support structure- ס – with lines like the strong horizontal branches of the Cedar of Lebanon – to support the products of the mouth – פ - and head –ר – "thoughtful, meaningful words". The first word for "write" in Torah is Ksav-כתב. Its 1st literal appearance[1108] in Torah is weeks before the revelation at Sinai -- in the same possuk as the 2nd appearance of ספר.[1109] What do the letters of Ksav-כתב say: 'Writing is a system and method for 'housing' 'hand-made' 'marks or signs'. Even if these words -Sefer and Ksav- existed with somewhat different but related meanings before the establishment of the Aleph-Bes – they could've been partly re-purposed to mean 'book' & 'write' – including the phono-ideographic potential as an aid in learning to read.

Though all letters of the Aleph-Bes have phono-ideographic potential, half are not used as regular affixes. All three letters of the word Sefer-ספר are in this latter group. The 11 non-affix letters may tell us something about the nature and origin of the Aleph Bes: In order, they are: [gimel, daleth], [zayen, ches, tes], [somech, ayen, peh, tsadi, kuf, resh].[1110] Six of the non-affix letters have two syllables compared with only two of the affix group: aleph and lomed. Aleph has the distinction of being the first letter -which contributes to its meaning as an affix. Lamed also has a uniqueness that transcends its sound: it's the symbol of domestication and guidance. It may have been a mono-syllable affix before it developed its full name associated with domestication. One can only imagine how the Aleph-Bes may have affected the development of the Hebrew language. One might also wonder how the Hebrew language developed before the Aleph Bes- was there deliberate invention?

II

To better appreciate the advantage of phono-ideographic words, let's compare the Aleph-Bes with Chinese.[1111] Chinese is written with signs that combine ideographic and phonetic characters—but the phonetic and ideographic elements are frequently separated. For example, let's compare the word for "good" in the two systems.

In Chinese, the common word for 'good' is written 好 and pronounced hǎo. It's formed by combining two 'radicals'. The first – on the left in this case- is 女 : woman. Written alone, it's pronounced nǚ. The 2nd radical – on the right - is 子 : child. Written alone, it's pronounced zǐ. So, in this very common word, the radicals contribute to the meaning but give no hint of the pronunciation.

For comparison let's look at the most common Biblical Hebrew word for 'good': TOV-טוב- in the context in which the word was first developed. It begins with the letter Tes ט – "a ball of yarn". This is linked by the letter Vov ו meaning "and"-- to the letter Bes ב which had the root idea -- according to what we have learned – or posited -- a "house for a married couple". This suggests a home of a married man and woman where the woman is capable of making – and makes – and uses -- balls of yarn.[1112] The pronunciation is inherent in the letters and their order with respect to each other. A woman who could make and use balls of yarn suggests a husband who can provide her with the wool – from his livelihood as a shepherd-- and sustenance-- from his livelihood as a farmer and/or trader. This combination –together with their house -- also usually built or provided by the husband—father-- Av – אב -- is at the heart of this word for good. It's easy to learn by children & adults and the letters provide both meaning and pronunciation.

[1106] The 11 letters as a group are called: *Otiyot HaShimush*. [Aleph in Biblical Aramaic is a suffix='the' "to the king-לְמַלְכָּא"Ez.4:12,+ many more- [as Aleph is 1st letter, it shows what's of prime/definite concern; maybe also similar to];Yud (י), prefix, future, plural, masculine. Br:12:12

" וְהָיָה כִּי־יִרְאוּ אֹתְךָ הַמִּצְרִים… " and when the Egyptians see you…

[1107] The first appearance of the word Sefer- ספר has already been noted above in the subchapter on the letter Yud. See footnote 944.

[1108] See, **PART 8: When was Ksav-Ivri created?** & assoc. with footnote 1062

[1109] Ex. 17:14 וַיֹּאמֶר יְהוָה אֶל־מֹשֶׁה כְּתֹב זֹאת זִכָּרוֹן בַּסֵּפֶר וְשִׂים בְּאָזְנֵי יְהוֹשֻׁעַ כִּי־מָחֹה אֶמְחֶה אֶת־זֵכֶר עֲמָלֵק מִתַּחַת הַשָּׁמָיִם׃

'And the LORD said to Moses, "Write this as a memorial in a book and recite it in the ears of Joshua, that I will utterly blot out the remembrance of Am'alek'…

[1110] As can be seen by the bracketed sequential groups, none of them – and none of the regular affix letters- stand by themselves. What is the significance?

[1111] "There is general agreement, inside China and out, that learning to read and write at a functional level requires much more time and effort from Chinese schoolchildren than from children in societies which use an alphabetic writing system. In earlier times, when literacy was necessary only for a small corps of officials and professionals, such considerations of efficiency were not important, but now, given the Chinese government's gigantic task of bringing literacy to a quarter of the world's population, they become urgent." Th. F. MAGNER, 1974

[1112] It's interesting in this context to look at Aishes Chayil- אֵשֶׁת־חַיִל – A Woman of Virtue -- the poem at Prov. 31:10-31-- where each line begins with a letter of the Aleph-Bes- in sequence. 5 verses concern making thread & clothing; 4 concern business. The 3rd verse, Prov 31:12- begins with a word whose root appears to be 'camel'- גְּמָלְתָּהוּ טוֹב . Its full meaning has to do with the way a camel drinks water. See, in this sefer **GEMILUS CHASADIM – 'CAMEL KINDNESS'**

ADDENDUM B.

SUMMARY OF FINDINGS CONCERNING THE ALEPH-BES

RATINGS ARE GIVEN FOR EACH CATEGORY – FROM 0 TO 10. 10 IS THE HIGHEST LEVEL OF CONFIDENCE, 0 IS – NOT EVEN A GUESS. RATINGS ARE INTUITIVE.

Ksav Ashuris	Ksav Ivri	Page #	Original Meaning of letter	Origin of name[1]	REASON FOR NUMERICAL ORDER		NOTES # OF STROKES TO FORM LETTER[2]				PRIOR WORK: A. DEMSKY SEE FOOTNOTE 888A.1
					Absolute[3.A]	Relative	KSAV ASHURIS	KSAV IVRI	CUNEI-FORM[4]		
א		226	10	7	9	9	3	2	2		HOME-STEAD
ב		227	10	6	8	2	2	1	4		
ג		227	10	6	8	2	2	1	1		
ד		228	10	6	9	2	2	1	6		
ה		228	9	7	7	5	2	3	3		
ו		229[5]	10	7	0	7	1	2	4		
ז		229[6]	7	4	7	6	2	3	2		FIELD
ח		230[7]	6	4	4	6	2	5	4		
ט		230[8]	7	8	9	7	2	3	3		
י		231	9	0	10	8	1	2	6		HAND
כ		231	10	3	2	10	1	2	3		
ל		231	10	5	0	8	1	1	3		
מ		231	10	8	0	7	2	1	2		WATER
נ		232	10	0	0	10	1	1	3		
ס		232	9	8	0	6	1	4	3		
ע		232	10	1	0	5	2	1	1		PARTS OF THE HEAD
פ		232	10	9	0	6	2	1	2		
צ		233	7	6	0	5	2	2	2[9]		
ק		233	6	2	0	4	2	1	2		
ר		233[10]	10	3	0	8	1	1	5		
ש		234	10	7	0	10	2	1	3		
ת		234	10	7	0	10	2	2	1		
		average→	9.1	5.2	7.1[2.B]	6.5	1.7	1.9	3.0		

ADDENDUM C. ON KSAV IVRI FROM THE ENCYCLOPEDIA TALMUDIT

כתב התורה

באותיות כתב אשורי ניתנה התורה, ונחלקו תנאים :

יש אומרים שהתורה ניתנה בכתב עברי (רבי יוסי בתוספתא סנהדרין (צוקרמאנדל) ד ז, וגמ' סנהדרין כב א; רבי נתן בירושלמי מגילה א ט; כן משמע מרבי אליעזר בן יעקב בזבחים סב א) - של בני עבר הנהר (רש"י סנהדרין כא ב ד"ה כתב עברי - (שנאמר: וְכָתַב לוֹ אֶת מִשְׁנֵה הַתּוֹרָה הַזֹּאת (דברים יז יח), הייני כתב הראוי להשתנות (רבי יוסי בתוספתא שם, וגמ' שם כב א), וחזרה וניתנה להם בימי עזרא בכתב אשורי (רבי יוסי בתוספתא שם, וגמ' שם; רבי אליעזר בן יעקב בזבחים שם), ולמה נקרא שמה אשורי, על שום שעלה עמהן מאשור (רבי יוסי בתוספתא שם, וסנהדרין שם; רבי לוי בירושלמי שם), ונביא העיד להם על התורה שתכתב אשורית (רבי אליעזר בן יעקב בזבחים שם), והניחו כתב עברי להדיוטות)מר זוטרא או מר עוקבא בסנהדרין כא ב), דהיינו הכותים (רב חסדא בגמ' שם).

יש אומרים שבתחילה - בימי משה (רש"י שם כב א ד"ה בכתב זה) - ניתנה תורה לישראל בכתב אשורי, וכיון שחטאו - בימי בית ראשון (רש"י שם) - נהפך להם לרועץ - ששכחוה (רש"י שם) - וכיון שחזרו בהם החזירוה להם, שנאמר - בנבואה על בית שני (רש"י שם ד"ה שובו לביצרון): - שׁוּבוּ לְבִצָּרוֹן אֲסִירֵי הַתִּקְוָה גַּם הַיּוֹם מַגִּיד מִשְׁנֶה אֲשִׁיב לָךְ (זכריה ט יב. רבי בתוספתא שם, וגמ' שם, וירושלמי שם), ונקרא כתב אשורי לפי שהוא מאושר בכתב)רבי בגמ' שם; ירושלמי שם), הייני כתב המיושר באותיותיו (רבנו חננאל שם ,(או שהייני כתב שאינו משתנה, ולא יפול בו דמיון לעולם, לפי שאותיותיו בלתי מתדמות, ולפי שאינו נדבק אות באות בשיטת כתיבתו (פירוש המשניות לרמב"ם ידים ד ה).

ויש אומרים שכתב זה לא נשתנה כל עיקר (רבי שמעון בן אלעזר משום רבי אלעזר בן פרטא משום רבי אלעזר המודעי בתוספתא שם ח, וגמ' שם, וירושלמי שם , (שנאמר: וְיֵי הָעֲמָדִים)שמות כז י) - מה עמודים לא נשתנו, אף ווים לא נשתנו (רבי שמעון בן אלעזר משום רבי אלעזר בן פרטא משום רבי אלעזר המודעי בתוספתא שם, וגמ' שם; ירושלמי שם ,(והיינו שיהיו הווים של תורה דומים לעמודים (ירושלמי שם), ואומר: וְאֶל הַיְּהוּדִים כִּכְתָבָם וְכִלְשׁוֹנָם (אסתר ח ט), מה לשונם לא נשתנה, אף כתבם לא נשתנה (רבי שמעון בן אלעזר משום רבי אלעזר בן פרטא משום רבי אלעזר המודעי בתוספתא שם, וגמ '

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[1] This isn't the same as the meaning of the letter. For example: It's clear that nun means fish but how did a fish get the name "nun"?

[2] This assumes, for example, that the Ksav Ivri Aleph can be written with one continuous stroke to form a horizontal U or V shape & then a 2nd stroke for the cross bar & no lines are overwritten. On this basis, the 26 Latin/English capital letters have an avg of 1.54 strokes/letter. Only 5 Ksav Ashuris letters: ש & פ, ל, י,ו remain clearly pictographic. ד-meaning 'door' is somewhat pictographic: a door with outside lintel & inside roof. Latin letters are derived from Ksav Ivri but no longer pictographic.

[3] A. For example: What is the connection between the letter vov & the number 6, independent of the letter vov's association with the meanings of the letters before or after? For letters beyond the letter chof, the author did not see or know of an association with the ordinal number of the letter. B. Average is only for 1st 10 letters.

[4] Alphabetic Ugaritic Cuneiform—see images of each letter: §2. Count is 'stylus indentations' not strokes. See also graphic on pdf 28,Philip J. BOYES, 2021

[5] The letter shape used here is more reprentative of the Ksav Ivri vov – similar to the Moabite Stone -- than the one labled Ksav Ivri.

[6] Image has been rotated 7°clockwise to make lines hortizontal.

[7] A more rectilinear shape is probably more appropriate for careful handwriting.

[8] "Phoenican" image has been rotated 45° clockwise to be consistent with Ksav Ivri orientation and design.

[9] Image for Tsade in Alphabetic Ugaritic Cuneiform is from pdf 28, Philip J. BOYES, 2021.

[10] Image has been rotated 6°clockwise to make main line vertical.

אומרים שבעים

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LEARNING FROM

THE MISHAKAN -- THE TABERANCLE -

AND

THE CLOTHING OF THE COHEN GADOL[1]

SOME PAGE CITATIONS INVOLVE ONLY INCIDENTAL MENTIONS OR DUPLICATE PAGES CITED FOR OTHER PARTS OF THIS STUDY

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in the Mishkan and Bigde Kahuna: 54-56,93-97,105,145,210,211,222
The question of Gold Thread in the Bigde Kahuna: 40,54,55,209,211,222

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[1] **This is a tentative title page for a new section that is presently comprised of separate sections that are physically located in different parts of this sefer or that have not yet been written up.**

GENERAL INDEX

1. NAMES ARE LISTED AS THEY ARE NORMALLY WRITTEN, FIRST NAME FIRST.
2. IN SOME CASES, NAMES ARE WRITTEN WITH THE TITLE FIRST : RABBI, REB, PROF. FOLLOWED BY THE NAME – AS THE NAME APPEARS IN THE TEXT.
3. THERE ARE NO "SEE ALSO'S" OR "SEE INSTEAD OF'S"
4. THERE ARE NO SUBENTRIES.
5. WORDS AND EXPRESSIONS APPEAR AS THEY ARE IN THE TEXT. THE AUTOMATIC INDEX SYSTEM DISTINGUISHES BETWEEN WORDS BASED ON FONT & CAPITALIZATION – RESULTING IN SOME DUPLICATION OF SOME INDEX TERMS – BUT THE DUPLICATIONS ARE NEAR EACH OTHER AND ACTUALLY REPRESENT DIFFERENT TERMS IN THE TEXT.
6. THE COLOR, BOLDNESS OR OTHER TYPOGRAPHIC FEATURES OF INDEX ENTRIES FOLLOW THE WAY THE ENTRY APPEARS IN THE TEXT & DON'T HAVE ANY OTHER SIGNIFICANCE.
7. HEBREW IS AFTER THE GREEK , WHICH IS AFTER THE LATIN ALPHABET
8. HEBREW TERMS THAT CONSIST OF MORE THAN ONE WORD SOMETIMES HAVE THE WORDS REVERSED IN THE INDEX ENTRY --- THOUGH APPEARING IN THE CORRECT PLACE

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